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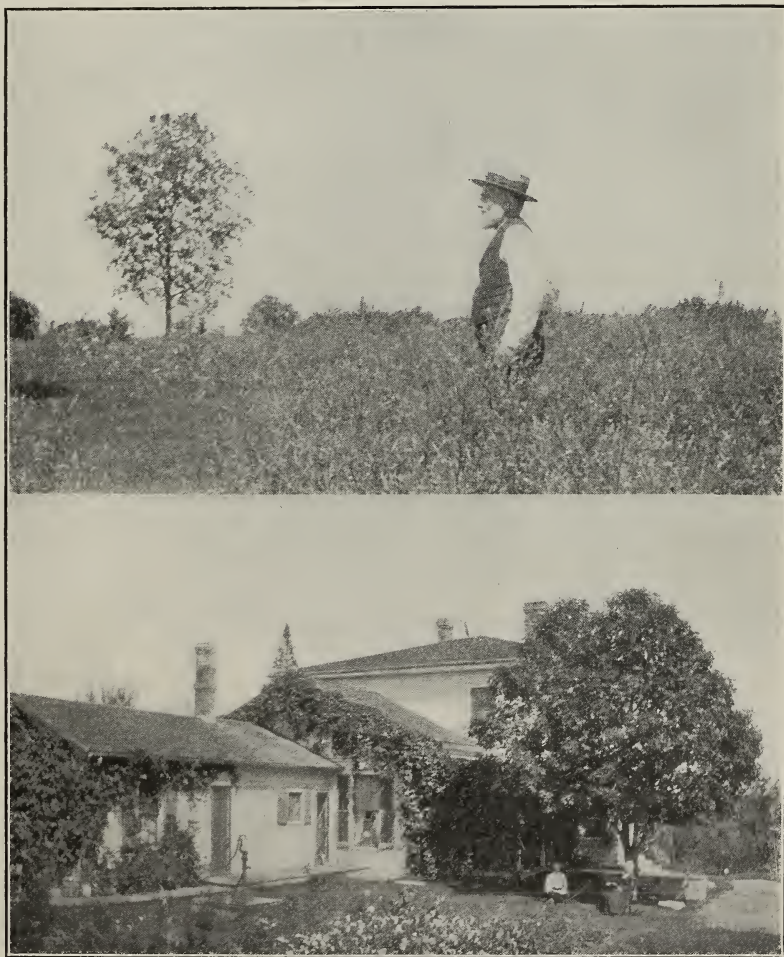
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Gleanings in Bee Culture

VOL. XXXVIII

MAY 1, 1910

NO. 9



No. 1—Dr. Miller watching the flight of his bees to and from his sweet-clover field last fall.
No. 2—A snapshot of the rear of his homelike home.

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.



How to Reach the CENTURY MARK

T. B. Terry's New Health Book

"HOW TO KEEP WELL AND LIVE LONG"

Author's Introductory

What I Know About the Matter

MY mother had eleven children. Only three lived to mature age. Of course I am one of them. But you can see my start in life was not a strong one. I was a sickly child like the rest. In college I broke down from too much confinement and study, stayed out a year, tried it again, but had to give up. Doctor told me I must get outdoors to work. Did so, and soon got better. We moved on to our farm where we now reside, 38 years ago. Then I got along fairly well by hiring help to do all the heaviest work, as soon as we could make enough to pay them. I learned to do the studying, the directing, laid out the work, kept everything in order and moving, and did myself mostly easy jobs, like riding on a spring seat. Thus in due time we succeeded quite well, and the out-of-door employment gave me moderately good health. But after a few years we began to make so much on our little farm that public attention was attracted, and I was urged to write for leading agricultural papers. And about this time farmers' institutes began in Ohio and several other States, and I was asked to help at them. I didn't want to do this work as it would take me from home, and, of course, my farming would suffer as a result. But the demand was strong, and soon I found myself away from home all winter long, speaking two or three times a day, breathing bad air in the halls, living irregularly, often traveling nights, and putting in every spare hour writing articles for the papers. Then on top of this was the constant worry over trying to keep the farm in as good order and producing as well as when I could give my full time to it. I did so want to keep my practice up to my preaching. At home I worked when the weather was fine, and rushed in to write when it rained, as well as at night. This wasn't so much to make money as that all this business had come to me, and I did not like to give any of it up. One hardly needs to tell that the result, some ten years ago, was—

from sheer will power, and then started for home by easy stages; kept up until I got there, then I was sick indeed. Would gain some at times, then be worse again, until life became a burden that I was really anxious to lay down. Our good old doctor seemed powerless to help me much. I remember writing two articles in those dark days when I was flat on my back, so hard was it for me to give up. My pen had almost to run itself. I hardly knew what I was writing. At last I urged our doctor to tell me frankly if I could ever again be as well as I had been before. He replied that he didn't think I could; that my kidneys were worn out, liver was in bad condition, I had serious prostatic and bladder troubles, rheumatism, piles, etc. He said that he could patch me up a little from time to time perhaps, but there was no chance for a cure; that one should bear these things philosophically, as they came to all and there was no help for it. Now, do you know he could not have said anything that would have done me more real good? Up to that time I had faith in a first-class

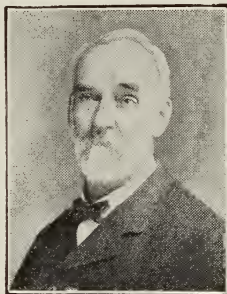
looked so completely beaten that I really felt sorry for him. And he said: "Terry, I don't see how in the world I could have been so mistaken in your case." He was not mistaken. If I had gone on living in the old common way it would have turned out just as he said. Probably 99 men out of 100 would have died just as he laid out for them to do. I was obstinate. I have never recognized any such word as "fail." To-day my kidneys are as good as any man could ask for. Every organ is in ideal order. I have the strong, vigorous, quick pulse of a young man. Have not had a trace of piles, rheumatism, or constipation for several years. In fact, I am sound and well in every way. Breathing, eating, sleeping, working—all are genuine pleasures. I really do not think I ever enjoyed as perfect health before in all my life as I have during the past five years. And, wonder of wonders—

I am Still Gaining

Right living is naturally slow in bringing results; but they are certain, and the best of health will come in due time. Do you wonder that I am enthusiastic? Haven't I earned the right to be? Now, you will find no idle theories or fads in the following pages. I shall tell you what I have done and know. I am going to lead you gradually to improve your ways of living and gain splendid health. Then, barring accident, there is no reason why you may not live long, 20 or 30 years longer than people generally do, and enjoy life fully all the time. Few indeed know what fine health really is. We have slowly drifted away from simple, proper, natural ways of living. As a result we have diseases and ills almost without number, and our lives are much shortened. The truth along these lines has not been realized by many. It has been practically hidden by much that was wrong. But now let us get down to business.

If you are ailing, as most people are, you can cure yourselves same as I have myself, and as thousands of others have done. You can become so well as not to know what it is to have an ache or pain or bad feeling. I will tell you just how to do it. If you are well now, or when you get well, you can keep so by continuing the same simple, natural, healthful way of living. I have long been urged to write a book of this kind, but have held off until years of personal success and study give me the right to speak quite positively. It is my aim to make these pages entirely reliable, a sage guide for busy people who haven't the time to work for years sifting truth from a mass of error. This book is most earnestly dedicated to all the people of America.

T. B. TERRY.



MR. T. B. TERRY
In his sixty-seventh year

physician. I thought he could cure one when he was sick. His words knocked out all of this feeling, and I paid him up, really in pretty good spirits. Why? Well, it thoroughly aroused what little will-power I had left. I said to myself, "I don't know what I will do, but I know that I will not die. I am going to get well in some way."

Where there is a Will there is a Way

I began to study this matter of health and proper living for all I was worth. Of course, I was years slowly working my way up, making mistakes, but gradually gaining. It was with much pleasure that I met our doctor one day years after, on the street. I was stepping off like a boy, just as I felt. The doctor

A Complete Breakdown

I had so much ambition and push that I kept driving on after nature had given several danger signals. In fact, I did not consider them at all—hadn't time. The end came when I was in New York. The doctor said I was in a critical condition. But I surprised him by getting up long before he expected,

Mr. Terry's book is now ready for delivery. Price, cloth-bound, \$1.00; or with a year's subscription to "Cleanings in Bee Culture" for \$1.50

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EDITORIAL

By E. R. ROOT

THE Ohio foul-brood bill is now on the calendar for vote in the senate. Write your senator at once, urging his support.

Later.—The bill has now passed both houses.

D. M. MACDONALD makes a strong plea in this issue, page 296, for the much condemned black bees. The article is ably written and very fair. It is worthy of careful reading.

THE chilly weather of the last two weeks, that seems to be almost universal over the Northern States, will doubtless cause a great deal of chilled brood. Do not jump at the conclusion that you have foul brood.

OLD OR NEW FOUNDATION.

ATTENTION is called to a Straw of Dr. Miller's in this issue, on the relative merits of fresh and old foundation in sections. The doctor takes the ground, it will be noticed, that the bees will work on the one as well as the other. We shall be glad to get the experience of others who have tried it.

PARCELS POST.

WE have not said much lately about parcels post. It is a strategic time now for bee-keepers to write their Senators and Representatives, urging their support of this needed legislation. The following, from the *Ohio Farmer*, shows the benefits that would accrue from a parcels-post system. It will be especially valuable to bee-keepers:

The first postal need of to-day is a rural service on a paying basis with the elimination of the postal deficit. A cheap general parcels post will quickly follow. The posting of one five-cent packet each week by the average farmer to and from the town where he sells his produce and buys his supplies will insure a postal income of \$10.00 a week per average route, or \$20,000,000 a year for the entire service. The wants of the hundred families on the average route surely warrant the expectation of a business of at least one ten-cent packet a week to and from the farmer's market and his home, with a resulting rural income of over \$40,000,000. Even this business implies a constant load by the carrier of less than 18 packets weighing, possibly, 300 lbs.

The establishment of a daily service of two vehicles going in opposite directions over the same course will soon be needed; and cutting down the haul of all matter one-half will at once quadruple the capacity and the efficiency of the service. We are assured by the highest authority that there are several routes where this proposed service will be a

success from the start. Its trial will prove a wonderful object-lesson as to the benefit of good roads and of machinery adapted thereto. We pray the financial and personal aid of all the friends of postal progress, and especially the aid of the press, in arousing the public opinion needed to secure the needed legislation.

J. L. COWLES,
Secretary-Treasurer of the Postal Progress League,
351 Broadway, New York.

No one is fighting the parcels-post system except the small country storekeeper and the express companies. It has been a success for many years in Europe, and we should have had it long before this had it not been for the Cannons and Aldriches in Congress.

Later.—See Colorado department.

"BEE-KEEPERS' LEGAL RIGHTS."

THE new edition of "Bee-keepers' Legal Rights," by the National Bee-keepers' Association, has just been issued from the press. Like the old edition it contains copies of laws and court decisions relating to bee culture. Besides that, it has a long array of testimony showing the valuable service performed by the bees in pollinating fruit-trees. The last few pages are devoted to copies of the various foul-brood laws as they stand on the statute books in the several States to-day.

Every member of the National will doubtless have a copy, and every one who has not would find this book, "Legal Rights of Bee-keepers," worth the dollar membership fee alone. He should be familiar with its contents, so that when trouble arises he can meet the enemy with hard cold facts, both in and out of the court-room. This is a case where knowledge is power.

See what General Manager France says about it in another column. Of course, it is understood that no one can get a copy unless he is a member or is enrolled as such, as the book is not for sale.

NON-SWARMING BROOD-CHAMBERS.

IN this issue, pages 295 and 299, we show illustrations of two different styles of anti-swarming devices. As we understand it, these have not been tried very extensively. The basic principle seems to rest in having a large clustering-space either beneath or in front of the brood-chamber, but such clustering-space so arranged that no comb can be built in it. The idea seems to be an adaptation of the Aspinwall principle of furnishing a clustering-space; but instead of placing that space *between the frames*, as does Mr. Aspinwall, these other people would place it in front of or under the brood-chamber.

If we are not mistaken we had a talk with Mr. Aspinwall regarding some plan of this kind, and he told us he had been over this ground, and that the clustering-space had to be disposed between the combs to be effective.

We present the idea in two different forms, because it may involve a principle having some merit; but until it can be tested, everybody should go slow, for we have been fooled so many times about this swarming proposition that, when a new thing looks good, like this, we should remember past experiences.

PROSPECTS FOR THE SEASON.

A large number of reports have come in since our last issue, and only about one in four is unfavorable; that is, three out of four report good wintering, good prospects for the season, etc. As is always the case, there are sometimes conflicting reports from localities close together. This is often due to difference in care used; but this year it is quite probable that the difference in the quality of the stores has a great bearing on the matter. As we have already stated, at one of our outyards nothing but honey-dew was gathered, while two miles away a fair crop of light honey was secured. The contrast was quite marked this spring. At the yard where so much honey-dew had been gathered, many of the colonies showed symptoms of dysentery, and, all together, they were in much poorer condition than at the other yards. Sugar was fed in both places; but in spite of this the honey-dew still in the combs in the late fall made trouble.

The light snow which has fallen over a large portion of the North, instead of hurting the prospects has served to put the clover in much better condition than it was before. Snow in April is almost always good for clover. Fruit has been injured to some extent by the frosts; but the bee-keeper, unless he is a fruit-grower also, can console himself with the thought that, when fruit is scarce, honey is apt to be higher in price.

ARE BEES KILLED WHEN FRUIT-TREES ARE SPRAYED WHILE IN BLOOM?

A YEAR ago, as will be seen by page 514 of our last year's volume, we published a letter from O. B. Metcalfe, of Metcalfe & Parks, Mesilla Park, N. M., showing how five of their yards had been almost entirely ruined because neighboring fruit-growers sprayed their trees while in bloom; of how not only the bees died by the thousands, but the brood also. The other yards remote from this spraying did not suffer any injury. We have had other proof from time to time of how this ignorant spraying at the wrong time ruins the bee-keeper's prospects for honey, if it does not entirely clean out all his bees. The following letter gives further evidence along this line:

We are having bad luck with our bees. One of our neighbors sprayed his fruit-trees while in full

bloom, and it ruined us. The bees are still dying. That was four days ago. We have had a big rain since, which seemed to help somewhat. Does Paris green usually kill the brood? The bees carried out larvae in all stages. Does it kill or injure the queen?

I wonder if there could not be a law passed in Indiana in regard to spraying fruit-trees while they are in bloom.

Lebanon, Ind.

J. W. SWAILS.

We have not thought it necessary heretofore to give any special prominence to the fact that bees are killed if trees are sprayed while in bloom; but as the fact was doubted by one or two of our very good bee-keeping friends, we shall be glad to hear from others who have suffered. No damage, of course, occurs when the non-poisonous mixtures like lime and sulphur washes and the kerosene emulsions are used; but, as any intelligent fruit-man knows, these are insufficient to kill all the pests.

During the years past we have had a good many hundred reports where bee-keepers have written in and asked why their brood was dying, supposing it had died from foul brood; but investigation showed that in many cases, at least, this brood was poisoned, and that as soon as the spraying season was over it ceased to die.

In answer to Mr. Swails we may state that there is no law against spraying fruit-trees while in bloom, in Indiana. There is no such law in force except in the State of New York, in Ontario, Canada, and possibly Michigan. Conditions became so bad in York State that the bee-keepers of that commonwealth put in a strong plea to their Legislature and secured the law.

PREVENTION OF GRANULATION OF COMB HONEY BY KEEPING IT IN A WARM ROOM.

ON page 134 we spoke of the fact that a carload or two of our western alfalfa honey showed a tendency to granulate, and that we expected to arrest granulation by storing it in a warm room subject to a temperature of between 80 and 90 degrees Fahr. Some experiments that we had conducted a year or so before on a small scale led us to believe that we could not only arrest granulation, but that we could actually reduce it. The temperature of the room in that case was slightly above 100, and some cakes of honey that was granulated solid were actually brought back to a liquid condition; but we found that this high temperature had a tendency to make the combs sag in the sections.

This winter we put a carload and a half of comb honey in a large room, into which we had put extra steam radiation, maintaining a temperature nights and Sundays continuously of between 75 and 90 degrees. While we held granulation in check, we noticed that a good many of the combs had sagged to an extent that it spoiled the chance of marketing them. Nearly all the honey that has been held in this high temperature has suffered slightly in flavor. The average consumer would not notice it,

but an expert can readily detect a comb honey that has been kept in a hot room for three months from that which has been, say, a month off the hive. With this slight impairment of flavor, and very slight it is, there is a barely perceptible darkening of the honey itself. Taking it all in all, the experiment conducted on a large scale is somewhat disappointing. It is almost a case of between the devil and the deep sea. A comb honey that is granulated to a greater or less extent is slow selling, and at very moderate prices. If we stop the granulation by the hot-room plan, and prevent other honey from starting, we run the chance of darkening and impairing slightly its flavor.

WHAT TO DO WITH CANDIED COMB HONEY.

We have been conducting some other experiments in liquefying candied comb honey, running it through a capping-melter machine, and, by the way, one of these machines is just the thing for this purpose. The combs are cut out from the sections and dropped into the capping-melters. The candied honey and the wax melts up together. The combined product flows over into a receptacle. A pipe connecting with the bottom draws off the free honey while the wax flows over the top. The thing goes on automatically about as fast as a man can cut the combs.

Experience shows that if candied comb honey can be sold for 10 cents to a certain cheap trade, that it is better to sell it that way than attempt to melt it up; but if it won't bring 10 cts. then one can make nearly that figure by selling the honey in the extracted form, and the wax, when melted up, at a combined figure that will net nearly 10 cts. Strangely enough, the honey that runs through the capping-melters in this way is of good color and body. The body, however, is a little too good, that is to say, the honey is very thick and waxy, and probably would not candy readily; but there is a very slight impairment in the flavor—so slight that none but an expert would notice it; but when this erstwhile candied honey is run through the capping-melter in connection with the wax, and put alongside of honey that has been taken from the hive and not heated, the consumer would notice a slight difference in favor of the latter. If they were kept separate he doubtless would not see or taste the difference.

BABY NUCLEI FOR THE REARING OF QUEENS; WHY SOME OF THE PRATT OR SWARTHMORE METHODS FAILED,

On page 283, in his regular department, our old correspondent Mr. G. M. Doolittle does not take very much stock in baby nuclei for the rearing of queens. But the form of baby nuclei that he particularly condemns we do not think is now in use. We tried out the Pratt (or Swarthmore) nuclei (the kind he seems to have in mind) one season, and proved that we could fertilize queens on that plan; but as the little clus-

ters of bees were too much inclined to swarm out and cause trouble we finally gave them up. The larger twin nuclei, capable of holding one-half to three-fourths of a pound of bees in both sides have given excellent results. The baby hives are made of $\frac{7}{8}$ -inch lumber; have a double cover and a telescope that slips down over the whole, reaching two-thirds of the way down to the entrance. The form of the hive is almost cubical; and when there are two clusters of bees (one on each side of a division-board $\frac{1}{8}$ inch thick), approximating 1000 to 1500 bees in each, experience shows that no cell or virgin is chilled. It is very easy to determine when this takes place. Yellow queens, if they are chilled at any time in the cell or virgin state, are apt to turn dark and look small. The fact that some of the most prolific and best queens we have ever reared have been raised in these large twin baby nuclei goes to show that they are the equal of the larger colony or larger nuclei having the brood scattered over a much larger surface, more exposed to the changes of temperature. A small clustering-space of two or three thousand bees in a cubical or compact double-walled hive will keep as warm as or warmer than a much larger cluster in a long flat brood-chamber having Langstroth frames. By the way, this frame makes a poor nucleus. It is too large and too long. Our large twin nuclei are used only during the months from May to the first of September; that is to say, during the hottest months of the year. Before and after that time our queens are reared in full-sized colonies. Apparently Mr. Doolittle has much cooler nights during the warm months than we have.

There were a good many fancy tricks of the trade that the late Mr. Pratt was able to work successfully that the rest of us who practice queen-rearing on a large scale could not make go. Mr. Pratt was a genius—a wonder in his line. We have seen him perform feats in queen-rearing that others could not accomplish. On a large commercial basis many of his ideas were impractical. In his mild climate he could do many things that were impossible elsewhere. It is not strange, then, that many who tried to follow him failed.

We presume that we have criticised his methods as much as any one; but when we saw him actually do the stunts that he described, we doubted no longer. As most people lack either his special environment or his consummate skill, it is a waste of time and money for them to attempt to follow some of his ideas, at least. For example, his 50 or 100 bee baby nuclei were impracticable in most localities. We could make them work only during the very hottest months of the year. At any time they were liable to swarm out, or, worse yet, be robbed out. Moreover, they had to be supplied with fresh bees every so often. We experience none of these troubles with our much larger double-walled twin nucleus hives.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

SIX SPACES of bees on a frosty morning the first of May is better than more or less, says Doolittle, p. 211, and, as usual, I suspect he's right. I don't have many as good as that ever, and can easily reduce any that exceed it (and I always do), but the laggards are what beat me.

J. L. BYER wants winter entrances not less than 10 or 12 inches by $\frac{1}{2}$, and backs up the idea with pretty stiff arguments.—*Canadian Bee Journal*, 72. [Mr. Byer may be right. We noticed that some of our colonies last winter that had, by mistake, larger entrances than usual were not only in fine condition, but the combs were dry and sweet. There is a nice golden mean somewhere, and we shall invite a discussion of the subject next fall.—ED.]

LOUIS SCHOLL, you want to know, p. 246, when I'm going to try some bulk comb honey. I've just reread your array of troubles in trying to produce section honey, p. 39, and it does look as if I'm a goose to go through all that and then get no more for sections than bulk. But why didn't you tell me all that before my bees got so in the habit of storing in sections that I don't have a tithe of the troubles you catalog? Still, maybe I'd better. Say! do you *know* of any market in the North where I can sell bulk for the same as I do sections?

F. GREINER, p. 181, agrees with the editor, that "we shall sooner or later be compelled to give up the use of sections on account of the scarcity of suitable timber to make them." Well, we can go back to four-piece sections, same as we first used, and almost any timber will do for them. [It will be at least ten years, and probably more, before we shall have to give up sections. In the mean time, it is our opinion that some form of carton to hold cut comb honey will gradually take their place. Basswood is a rapid grower, and it is safe to say that a large proportion of the sections of to-day are made from lumber not over ten or fifteen years old. A basswood in front of the editor's home is 11 inches in diameter, and only about eighteen years old. Another tree the same age is 9 inches. As a general thing, basswoods will grow more rapidly in a forest than out in the open, for they seem to like shade in their earlier years.—ED.]

FIVE or six weeks' time is given as the lease of life of a worker in the busy season. That was the belief fifty years ago. At that time, and for years afterward, it was easier than now to test the matter, and thousands had the opportunity to test it, for pure blacks were common then and scarce now; and when an Italian queen is introduced into a black colony it is easy to tell when the

last black disappears. The many who observed agreed that in the busy season about six weeks is the limit of life, and that belief has gone unchallenged through all these years until now, when we are told by G. A. Wright, page 270, that with his hybrids the limit was 27 days. It is easier to believe that Mr. Wright's bees are exceptionally short-lived, or that some mistake has been made in observation—for some hybrids can not be distinguished from Italians—than to believe that every one heretofore has made the stupendous mistake of making the time 55 per cent longer than it should be. It must be remembered, however, that if six weeks is the life of the last bee that disappears, the average must be at least a little less than that, for it is not likely that all should die at exactly the same age. [The trouble with our friend Wright was that he was basing his conclusions on practically a single experiment. With hybrid bees he would have had no means of proving absolutely the correctness of his conclusion; for many hybrids will show up like nicely marked Italians.—ED.]

"FOUNDATION should be fresh. If it was put in sections the previous year, the only thing is to pull it out and melt it over." That's what one says. Another says, "Foundation doesn't spoil with keeping; it's just as good when five years old as when fresh from the mill." How can it be that such opposite views are held? Can both be right? In a way, yes. I've had experience both ways. Every year I aim to have ready in advance enough sections filled to answer for the biggest kind of crop. So, of course, most years a few thousand will be left over, and I think I've had some sections that had been filled four or five years. I couldn't notice but that the bees began on the foundation just as promptly as if it was fresh. Of course, I think there must be some difference—the fresher the better. But the difference is very little. If not put in sections, but kept packed in sheets, it's hard to say how many years it would keep. On the other hand, I've had sections of the previous year's filling that the bees would none of. Such sections would be left entirely empty while the rest of the super would be filled. They had been left on the hive at a time when no honey was coming in, and the bees had given them a sort of polishing, perhaps a thin coat of propolis. The only thing to do is to melt up such foundation. The moral is: Don't worry about foundation being old; but never allow sections in the care of the bees when they can do nothing with them but spoil them. If there's a dearth of considerable duration between two honey-flows, take off the sections at the close of the first flow, and then put them on again at the beginning of the next flow. But early in the season, before the first flow, no harm comes to the sections from being on; it's in the fall that the mischief is done, mostly by being too slow about taking off all supers promptly at the close of the flow.

Notes from Canada

By R. F. HOLTERMANN

So Dr. Miller has twice had "the last word" upon the rights of bee-keepers to a location. Seeing that he has a good many sound arguments to reply to, his opportunities have not exceeded his needs.

PREVENT ROBBERING.

To Jacob Alpaugh, inspector of apiaries, credit is due for the idea of warning, by letter, the bee-keepers in foul-brood districts against allowing bees to rob out hives in which colonies perished during the winter or early spring. [This is very important.—Ed.]

THE WEATHER.

It is scarcely necessary to say that the weather has been very remarkable. During the week beginning April 4 the bees had a royal time on soft maple, willow, etc.; they flew heavily loaded; and whatever the outcome may be, so far they have had a better chance to secure stimulative food than they have had for years.

CHUNK HONEY.

Wesley Foster, page 209, April 1, condemns the idea of producing chunk honey in Colorado. In Ontario, to encourage the production of comb honey in large frames, cutting this out and putting pieces of comb in vessels, and pouring extracted honey on it, would be a great mistake because of our rapidly granulating northern honey. Think of a customer buying this on faith as partly comb, or think of the dealer trying to show the customer the comb honey submerged in the granulated extracted. I doubt if people have faith enough in one another in Ontario to deal in this way very extensively.

THICK SYRUP.

On page 206, April 1, the editor refers to thick syrup fed late, stating that "good results" were obtained, etc. Where there are some natural stores, especially if they are of doubtful quality, the later the bees are fed the better, if the syrup is thick. Let the bees consume the inferior stores while they can fly. Then by late feeding are the bees not less likely to start brood-rearing? and will there not be less excitement and waste? I would consider the recapitulation by the editor excellent, only I would dwell a little more strongly on the danger of honey-dew in winter stores. [Your point is a good one. By feeding late we give the bees an opportunity to use up as far as possible their old and undesirable stores, such stores as would not be suitable for a winter food. This may account in part for the good results following our late feeding.]

It is also true that early feeding has a tendency to stimulate brood-rearing, especially

if that syrup is thin. The wear and tear on the bees in reducing this syrup to the proper consistency so pulls down their vitality that some of them die even before winter actually comes on. Feeding always has a tendency to force the bees out in flight, and if the weather should be a little chilly many will be lost. Very late feeding with thick syrup in weather too cold for bees to fly can not force them out, and, what is more, the syrup is immediately stored. As a result there is little or no wear and tear on the bees that must necessarily undergo the rigors of winter.—Ed.]

CONDITION OF BEES.

It is probably a good many years since bees in Ontario have come through the winter as well as they have this season. Colonies wintered in the cellar or packed outside (I have both) are alike in good shape. During the past week, beginning April 4, I went through nearly all the colonies, examining them sufficiently to determine that they had queens and did not lack stores. I found plenty of capped drone brood, but, so far as I can now remember, there did not appear to be much hatching worker brood. Is this because the winter was so very steady, and the bees remained in their packing quietly clustered? [There were plenty of young bees in this locality at this time.—Ed.]

SEALED COVERS VS. ABSORBENTS.

On page 207, April 1, the editor, in part, states: "We have a suspicion that those who so loudly champion the absorbing-cushion plan of wintering may not have tested side by side the sealed-cover and absorbing-cushion plan." May not conditions have much to do with this question? I have known of cases where prolonged cold, at a time when the hives were not covered by snow, resulted in the entrance being frozen up or practically so by the condensing moisture. When the moisture passes up through the packing there is no danger of this.

Then I "have a suspicion" that these covers are not *sealed* if sealing means that no moisture passes up and is absorbed by the packing. In painted hives I have been surprised to find moisture pass through the $\frac{3}{8}$ -inch wall and then form a blister between the board and paint. I have, however, a case this spring where a colony wintered well, although, through an oversight, having a hive-cover that was covered on top and the sides with galvanized iron; yet I have not sufficient faith in the method to try the plan. Locality surely has something to do with results; in the extreme northerly apicultural sections, in my estimation sealed covers are risky. [We quite agree with you that conditions have much to do with this question. In localities where the entrance is liable to be sealed with ice, the absorbent plan doubtless would be better.]

When we refer to "sealed covers" we mean those that are secured by the ordinary propolis sealing. They may or may not be hermetically tight.—Ed.]

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

CORRUGATED DRIP-BOARDS.

The corrugated drip-boards are away ahead of the wooden drip-sticks. They are more quickly put in a case, and they also make a good cushion when the case is jarred. The drip is absorbed if not too much, and there should not be much in a good case of honey. After unpacking several hundred cases where the corrugated boards were used I can say they look good to last.



SWARMING IN THE WEST.

Swarming is not as serious a problem in the West as in the East, for two reasons. There may be other reasons, but I will give only these two now: The honey-flow is never so rapid in the alfalfa regions as in the white-clover, basswood, or buckwheat localities of the Eastern States. The bees do not become worked up to such a high tension as where the flow comes on in a very torrent. If there is not a sixty-day flow from alfalfa the surplus is not likely to be very large. The bees take things more calmly, and proceed to enter the supers, many times, without thinking of swarming.

The second factor is the cold nights we have which act as a sort of damper to the warmth of the swarming fever. We often have a few days of cool weather which will frost the notion of swarming. But seasons do come when our bees are as bad as any, but I think they are more rare in the high cool altitudes.



BEE-KEEPERS AND THE PARCELS POST.

Even the most observing of citizens are slow to see the damper placed on our national progress by the withholding of that great human betterment, the parcels post. That which we do not see as a definite loss does not strike us as real; but even if we do not see what we are missing in prosperity by the lack of this reform, the loss is none the less real. The cost of expressing a gallon of honey from Denver to Kansas City is now about 75 cents. The cost need not be over 25 cents, and that would be three times the fourth-class freight rate.

The parcels post will make the selling of honey by mail order the most profitable way for the wide-awake bee-keeper to sell his honey. The consumers who are now anxious to connect themselves directly with the producer will be able to do so economically under the parcel-post method. Honey and other farm products will pass more directly from the producer to the consumer. This will effect a great national saving that will make us all richer. With the adoption of the parcels post I expect to see honey eaten

much more, and this will tend to give us a better price for a choice article.

These instances show that bee-keepers can not be too well posted on freight rates, classifications, and the proper way to ship honey. If the freight agent in the first case spoken of had been looking out for the best interests of his company's customers he would have told the bee-keeper how to secure the lowest possible rate.



THE POPULAR CONCEPTION OF HONEY.

One who works with honey, and is thinking of it a great deal, can hardly realize what people in general think of it when they see it in the stores or have it brought to their attention. There is one thing that has very agreeably surprised me, and that is the high regard as a food at which honey is rated. There is that flavor in the thought the word carries which suggests *par excellence* of sweetness. The word is the oldest one in our language for a sweet, and, being in use every day, is well advertised. This idea of quality that adheres to the word "honey" can not be maintained without a correspondingly higher price being asked than for other sweets. One of the very things that make people suspicious of the purity of honey is its cheapness. If honey in the comb or extracted honey in glass and tin could not be bought for less than twenty cents a pound there would be many more people who would have confidence in its purity. What we bee-keepers need to know is that pure maple syrup will bring \$2.50 a gallon; and is not a fine quality of honey worth as much? Maple sugar sells for 30 cents a pound in many stores in Denver now. Honey should come much closer to it in price than it does at present, though it is also true that a very fine quality of comb honey will sell readily at 20 cents per section.

Some of the readers of GLEANINGS no doubt read the article in February *Hampton's Magazine*, "What has Become of our Pure-food Law?" by Samuel Hopkins Adams. Mr. Adams stated in the article that the markets of the country teem with honey that is mainly glucose. I wrote to Mr. Adams that I thought the facts must be overdrawn, as I had never seen any honey that I thought contained any glucose, out here in Colorado at least. He replied that he got his information from the reports of the State Food and Dairy Commissioners of Illinois and Minnesota.

Mr. Adams asked if it were not a fact that the low price at which certain low grades of honey are sold did not bear out his contention of adulteration. Now you see when a man like Mr. Adams sees honey advertised for five and six cents a pound, he, not being familiar with the methods of production, thinks pure honey could not be sold for so little, so it must be adulterated. If the low price we bee-keepers are getting for our honey casts the suspicion of adulteration upon it we should have the courage to raise the price enough to instill confidence at least.

Conversations with Doolittle

At Borodino

CONDITIONS WHICH INFLUENCE THE DEVELOPMENT OF QUEEN-BEES.

"I reared a few queens last summer, and was infatuated with the work. What are the conditions under which the *best* of queens can be reared?"

"Did you ever go to a colony which was preparing to swarm, Mr. White, and ask the bees how they reared queens so as to bring themselves all the way down, from creation to the present, in such good condition?"

"But, Doolittle, queens can not be reared in the numbers needed for market as the bees rear them for swarming purposes."

"Possibly not, under just the same circumstances, but we can come very near to it. Most of those who advertise queens for sale do the best possible to bring about the conditions needed, I think."

"A few years ago one of our noted men said, 'In a normal colony a queen emerges into an atmosphere of warmth and high humidity, and has accessible an abundance of nutritious and stimulative food.' Would that describe the condition in which queens emerge under the swarming instinct?"

"Yes, and it also describes the condition under which most queens emerge, when reared where an old queen is superseded by the bees during July and August, the time of year that supersedure occurs most often."

"And are queens reared under the supersedure impulse as good as those reared under the swarming impulse?"

"I have not found them inferior."

"Does the Swarthmore plan come under either of these conditions? I read in a paper purporting to tell what Swarthmore said regarding the little colonies in which he had his queens during the time they emerged from their cells, time of mating, and till they were sold or given to his own colonies, where he desired to requeen: He said that twenty-five bees will mate a queen. Fifty will do it better, but more than a small teacupful is a positive disadvantage. When I read that I said I was going to talk this matter over with you; and if you, who have been in the queen business for more than a quarter of a century, endorse this statement, then I was going into the queen-rearing business by putting a big advertisement into each of the bee-papers, splitting up part of my colonies into teacupful lots, when, by the pre-introduction plan, I could get a dollar queen from each teacupful once a week. As each colony would make from twenty-five to fifty such cupfuls for that many nuclei, I could make 500 or more nuclei from the colonies which I put into queen-rearing, and work the rest for honey. In this way I would more than double the results from my apiary each year."

"You remember what you quoted from

one of our noted bee-keepers, one having years of practical experience, about the conditions under which queens emerge in normal colonies. Well, that normal colony condition can not be obtained in any commercial queen-yard, subject to all of the changes of weather in your latitude and mine, with a teacupful of bees of any age; and I have been greatly surprised that some of our bee-papers should lend their influence toward baby nuclei and the pre-introduction of queens to such. I have tried the matter very fully, introducing to my own colonies the queens thus reared, so that I could prove this matter before I sent out any queens that might be a damage to those who purchased them, and the result proved that such queens did not come up nearly to the standard of those which emerge and were mated in nuclei having from three to six full combs, with bees to cover them fully, as has been my way for the past thirty years; so that all of this pre-introduction and twenty-five-to-fifty-bee baby-nuclei contraptions have been burned."

"But you did not tell why a normal condition could not exist with a cupful of bees."

"It is barely possible that it might in mid-summer, in a latitude like Florida and Texas, where there are no cool nights (if there be such a place); but with us who are not so favorably located, it is best to be sure that all of our queens have the advantages of the conditions in a normal colony which is about to make a change of queens. Based on many years of practical experience and close observation I find this: When a queen emerges from the cell she is far from being a fully developed insect. She is a white, soft, mushy thing, easily mashed and susceptible to cold and neglect unless held in her cell by the bees as in after-swarming. But in a commercial queen-rearing yard where only one cell is placed in a nucleus, or as in pre-introduction, where a cell is placed in a cage, queens are not so held, and these queens, just from the cells, need a high temperature and the humidity and nutritious food found in a normal colony. And by reducing this in any particular the perfect development is by that much retarded, and the queen is damaged in proportion to the reduction. Imagine, if you can, such high temperature, humidity, and nutritious food, in a little thin box out in a night when the temperature goes down from 38 to 50 degrees, with 50 bees to provide the same. Or in any of the pre-introduction cages provided with candy, as untritious food for the queen, and wire cloth for her to snuggle up against, like a prisoner, which she is, instead of an escort of bees to fondle her, or the expanse of a normal colony to roam in. No, the man who is taking up space in our bee-papers in proclaiming the *improvement* of our bees by selection, by importation, by various crossings, etc., and at the same time advocates rearing queens by the pre-introduction and cupful-of-bees plan, is drifting out on an open sea, without chart or compass."

General Correspondence

STOCKING A BEE-RANGE.

The Problem of Overstocking; Various Causes of Annual Variations and Marked Changes in the Varieties and Quantity of Honey-producing Flora; is a Range Overstocked When the Surplus per Colony Begins to Decrease? Number of Acres Necessary per Colony.

BY OREL L. HERSHISER.

Continued from last issue.

Variations due to climatic conditions are familiar to bee-keepers, as nearly all have felt the effects of drouth and excessive rainfall. We of the North have also occasionally had our honey prospects nipped by frost. In the semi-arid regions, if there is insufficient precipitation in the mountains to provide the needed water for irrigation, there results a short crop of alfalfa honey. Perhaps there is no extensive region where the crop of honey depends so much on rainfall as do the sage ranges of California. So important, indeed, is rain to the California apiarists, that they forecast their honey crop with greater or less precision as soon as a certain number of inches has fallen. However, with some of them near the coast, clouds and fogs set their prognostications at naught.

Variations due to the hand of man are observable wherever the woodman's ax or the farmer's plow-share has operated to subdue the wilderness and render the soil fertile. In times past, excellent basswood locations were plentiful; but now, as the result of the rapid and constant utilization of basswood timber for lumber and other purposes, good basswood ranges are few and far between, and the source of this excellent variety of honey is fast disappearing. Often extensive areas of white clover, wild red raspberry, willow-herb, and other wild flowers appear of their own accord upon the land denuded of the basswood, along with other timber in the process of clearing the land, and, later, alsike clover and buckwheat are cultivated, and thus, usually, is there compensation for the loss of the basswood, for the soil on which it flourished is also adapted to the growth and development of these wild plants and the cultivated ones as well. Again, there are numerous locations, once good as sources of basswood honey, where later flourished wild flowers, and clover, and buckwheat, that have diminished greatly in value as bee-ranges because of the adoption by the husbandman of extensive truck farming, gardening, or the growing of cereals or other non-honey-producing plants as their main crops. On the other hand, many of the best honey-producing ranges in the semi-arid regions were worthless to the bee-keeper until the hand of man transformed the dry, brown, and often barren

wastes into blossoming fields of green and purple.

If alsike clover, buckwheat, or other nectar-yielding plant is found to be one of the main crops of a locality, this fact is significant as indicating that soil and climate are especially adapted to its perfect growth and development, and hence, acre for acre, such a location is more valuable as a bee-range than one where mixed agriculture is the rule.

Such variations as are due to the absence of uniformity in climatic conditions have comparatively little bearing on the proper stocking of a location, as we soon learn by observation and experience, and by consultation of the records of the weather service, what we may expect in the average season.

Those variations and changes that are due to the hand of man have a marked bearing on proper stocking; and if we would maintain the proper and most profitable ratio of bees to forage, readjustment of the number of colonies to the amount of flora will sometimes be required.

Measuring the area of some varieties of honey-producing-plants by the acre is attended with some difficulty. Basswood-trees, as a rule, occupy only a part of the space in the forest, the rest being occupied by other varieties of trees. Much of the goldenrod is found along fence-rows and in isolated bunches of greater or less area on unoccupied lands. White and sweet clover behave in a similar manner, occupying only such soils as are peculiarly adapted to their growth, and the same is true generally of all plants that flourish in the wild state. Necessarily the number of normal acres of such nectar-yielding plants on a bee-range (that is to say, the number of acres there would be if each variety grew on as small an area as possible and produced a vigorous growth and luxuriant bloom) can only be estimated.

The blossoming surface of plants that have a bush or shrub like habit is greater, by reason of its vertical extension than plants the bloom of which is spread out in a comparatively thin horizontal layer. This is true in a more marked degree of trees with spreading tops such as the basswood and apple, and especially where the growing areas are not crowded. Generally the blossoming area of plants depends upon the surface that is exposed to light and sun; and if plants grow thickly they will have a small blossoming surface, and *vice versa*.

It would seem that the matter of properly stocking a location is not so complex after all but that it may be accomplished within such limits as will leave a margin of inaccuracy sufficiently narrow as to be of small financial consequence.

As the result of the testimony of some of our brothers of the craft, and of my personal experience and observations, I should feel that I was fairly near the right point in stocking the location according to the following rules:

1. Wherever soil and climate are adapted

to the full development, both as to growth and nectar secretion, of one variety of first-class dependable nectar-yielding plant, or more than one, if their period of blooming is identical, one colony sufficiently populous to be a prime surplus honey-producer for each $1\frac{1}{2}$ normal acres of flora within $1\frac{1}{2}$ miles of the apiary will properly stock the location.

2. Wherever soil and climate are adapted to the full development, both as to growth and nectar secretion, of two or more varieties of first-class dependable nectar-yielding plants that flourish on the same range, and bloom in succession or at different periods of the season, each yielding honey of the same value per pound, and the same quantity per normal acre, one colony sufficiently populous to be a prime surplus honey-producer for each $1\frac{1}{2}$ normal acres of flora of the variety that flourishes in greatest abundance within $1\frac{1}{2}$ miles of the apiary will properly stock the location.

COROLLARY.—If the varieties of honey are of different values per pound or quantity per normal acre, the number of colonies should correspond with the number of acres of that variety of flora that will yield to the apiarist the greatest value.

Bee-keepers whose locations are understocked are allowing valuable resources that are right at hand to go to waste that could be economically garnered, for the reason that the appliances for running a fair-sized apiary are in a large measure sufficient for running one several times as large. It would seem to be the plain duty of the apiarist to stock his location properly if he desires to monopolize it.

Kenmore, N. Y., Feb. 9.

SPRING DWINDLING.

Longevity versus Pollen Substitutes.

BY SAMUEL SIMMINS.

Mr. F. Dundas Todd, page 122, Feb. 15, asks, "Is there a practicable method of giving a substitute for pollen inside the hives?" There are several, some of which he appears to have overlooked. Certainly he had an experience that would make him think hard on just that subject.

Mr. Todd gives a quotation from my 1904 edition, which is rather a condemnation than a helpful explanation of any plan of substituting artificial pollen in the total absence of the natural article. I have seen and known of so much harm being caused by candy fed in winter, and flour candy used at an improper season, that, until the above issue of my work, I had been very much in the same mind as the editor as regards offering various methods of supplying pea flour that I had tried over a period of more than thirty years.

But notwithstanding Mr. Todd found only four words referring to meal, I should like to ask him to take up that same edition of

the work referred to and cast his eye down page 36, where he will find directions for supplying artificial pollen in two forms inside the hive, close to the cluster. The best way that water can be supplied at the same time is undoubtedly by the means of warm thin syrup so placed that it will keep warm all the time.

If the weather should be fair when meal is given to the bees, then no harm can occur; but with a cold and sunless period my own opinion is they are much better without. Stocks have dwindled badly, just because flour candy had been supplied in early spring, and I have always tried to persuade my correspondents to discontinue its use at that period.

LONGEVITY AND STAMINA.

I have made a law unto myself, that, unless overtaken by disease, there should be no spring dwindling in any modern apiary where any sort of progress is claimed by the owner. His watchword should be *longevity* and *stamina*; and with these points gained he can defy dwindling and short honey crops. There is not even the excuse available that his bees have gathered a lot of honey-dew, as he can always feed enough pure syrup at the latter end, upon which the bees will then feed during the critical period, leaving the poor feed for use when they begin to move freely.

My own district is one that shows a great scarcity of pollen in autumn and spring, so that my stocks, nine years out of ten, winter without that desirable adjunct to their stores. Nevertheless, the bees frequently go from August until April without rearing the least patch of brood; yet I often get two and three frame nuclei (wintered as such) into swarming condition earlier than the established stocks wintered by many of my correspondents, even though they are blessed with an abundance of natural pollen.

The peculiarity of my district has compelled me to select my breeding stock so that workers hatched in August are found still active in May of the following year. So persistently have I bred for longevity that I believe no sort of ordinary neglect, apart from actual starvation, can cause these bees to dwindle; hence the necessity of early brood-rearing is not very important. I might even say its absence is an advantage, as progress is the more rapid when the advent of fair weather provides the necessary nitrogenous food. Possibly few owners have ever established stocks absolutely without pollen at the beginning of winter; but usually one comb would easily contain all I could find among 100 colonies.

In securing the quality of *longevity*, one is sure of obtaining almost every desirable point required in a good honey-getting strain. The stock of bees that loses the least number will always be strong in wing power, and, of course, they build up to full strength in half the usual time. Moreover, they appear to hibernate so perfectly that the stores show little diminution before brood is reared extensively. They require to fly but sel-

dom; and the almost total absence of dead bees before the entrance during winter is one of the most astonishing facts that result from breeding for longevity.

BEES STEALING EGGS.

Surely Mr. Frazer, page 108, Feb. 15, does not imagine any one can think fertile workers are responsible for producing a perfect mature queen. He should understand I implied fertile workers were responsible for the eggs found in queen-cell cups, *where no proofs could be offered that those eggs ever came to real queens*. His own experience goes to show that bees may sometimes steal eggs, though he perhaps does not realize that even his imported queen may quite likely have taken a flight, as many fertile queens do, and got into the wrong hive.

In the Feb. 1st issue, however, Mr. Pritchard appears to give a true case of bees stealing eggs. Not only were several queens reared different from those in any of the hives except one weak Carniolan lot, but when those dark bees were removed there was no further trouble.

Then we must conclude that bees do, once in a while, develop this remarkable propensity. But what was there to show that the same bees did not continue to appropriate eggs from some other Italian lot? This is a point the queen-rearer will have to consider seriously, for he will now require to keep his eyes open very wide indeed if he is to be sure he is securing young queens every time from his choice breeder.

Queenland, Heathfield, Eng., March 7.

A GLIMPSE AT THE CELERY INDUSTRY OF MANATEE CO., FLA.

BY E. B. ROOD.

At the request of Mr. A. I. Root I will say a word as to one of my celery-fields as illustrated by the engravings. The middle view represents the celery as it is growing in the field, the bleaching-boards having been taken down and the "cutters" cutting the celery for the "strippers," as they are called.

The upper view shows the strippers at work. They take off from the stalks all of the dead leaves and branches so that it is ready for the packers.

In the lower picture the packers are at work. We use in Manatee Co. a crate 12×18×24 inches, and this holds on an average about 3½ dozen bunches of celery. The field shown cut about 850 crates to the acre; and when it was sold it brought \$1.40 per crate, or \$1190 at the depot in Bradentown. The price went as high at times as \$2.20 a crate, f. o. b., but is now worth about \$1.00. I think it costs to raise an acre of celery, and market it, giving it the best possible attention, about \$400 to the acre.

The price of celery land is increasing rapidly, as many successful growers have paid for their lands in a single crop. But it requires lots of work to grow and harvest a

crop like this. If, however, we succeed in bleaching the celery with paper instead of boards, the work and expense will be greatly reduced. Many have tried paper this year, and I am expecting to buy a carload of paper for my own use next year.

Bradentown, Fla.

ITALIANS SWARM MORE THAN BLACKS.

Swarming of Italians and Blacks; Italian Colonies get Strong Too Early.

BY W. C. MOLLETT.

The past season I have had occasion to observe again the difference in the swarming of blacks and Italians when run for comb honey. It seems that most of the difference is caused by the greater prolificness of the Italians, which causes the hive to become crowded with bees very early in the season. This is rather a disadvantage, as the first swarm will swarm again in a month or less—something I have never known the blacks to do. Also, the size of the hive has something to do with swarming, as the bees will usually swarm much sooner in a small hive than in a large one. Some writer says that a large hive only delays but does not prevent swarming; but this seems to be at variance with the facts, as it has been proved that a hive that has a brood-chamber large enough to keep the queen busy for 21 days will not swarm nearly as soon nor as often as a smaller one. Of course, locality has something to do with it, as I am fully convinced that bees will swarm more here than they will in a region where the chief honey-yielder is white clover. The chief sources here are whitewood, basswood, and sourwood, coming in about two months' time, from May 15 to July 15. Neither flow lasts very long; but they excite the bees so that they will swarm early and often, especially Italians.

Some seasons I have known strong colonies of blacks to fail to swarm, but have never known the same thing to happen with the Italians in a normal condition. I do not think there is any question as to Italians swarming oftener than the blacks when run for comb honey; but when extracted honey is produced in large two-story hives the swarming may not be much of a nuisance. Some of the Swiss bee-keepers claim to have a non-swarming strain of the black variety; but in this case I think that the question of location must be taken into consideration. I am, however, firmly of the opinion that a non-swarming strain will never be developed from the Italians, and perhaps not from any other race; but I think that much greater chances lie in carefully breeding and selecting the blacks with the object of eliminating the swarming habit.

SOURWOOD AS A HONEY-PLANT.

This is a large shrub or small tree which grows on the high rocky parts of the Appalachian ranges and foot-hills. It blooms in



A CELERY-FIELD AT BRADENTOWN, FLORIDA.

The upper view shows the "strippers" at work—mostly colored women and girls. The middle view shows how they harvest the crop after it is grown. The lower view—packing the celery in boxes ready to load it on the cars.



GRAPEVINE TRELLIS FOR SHADE.

the early part of July, and continues in bloom for about three weeks, having a small white drooping flower. It is a very good yielder of extra white honey which is of a very thin nature, and does not granulate to any extent. On account of the favorable weather when it blooms it is one of the surest sources of honey where it abounds; and also on account of the trees being small and the wood of little value it is not liable to be cut off as close as whitewood and basswood. The honey has a somewhat stronger flavor than that from basswood, but is considered here as very fair honey, and always sells for a good price, as it is as white as or whiter than that from basswood.

Stonecoal, W. Va., Feb. 14.

GRAPEVINES FOR SHADE.

BY W. M. O'NEEL.

My apiary is located under a grapevine trellis for shade, as shown in the engraving. The posts of the trellis are set 8 ft. apart each way, boards 1 1/4 inches thick and 8 inches wide being nailed on each line of posts, and crossing each other at right angles by means of notches at the post. These project 30 inches on all four sides; 12 inches from both sides of each board is a galvanized wire, and on these wires and boards the vines are trained, leaving an open space for the flight of the bees between each four posts. This space, about 5 feet square, also lets in plenty of light and air.

This plan affords a good open shade, which is much better than the dense shade of the

apple-tree at one side, which is too dense on damp or cool days. The grapes pay me well for the expense and trouble. While the grapes were getting a start, the Kudzo vine, the flowering bean, and the tender moonvine gave excellent shade temporarily.

CONCRETE FOUNDATION AND ALIGHTING-BOARD.

The other engraving shows a close view of one of my hives under the trellis. This hive rests on a concrete slab for a foundation, which I find cheap and serviceable. These slabs are made with a hinged mold, and are two inches thick. They are half an inch narrower than the bottom-board and six inches longer, the extra length being tapered down to a thickness of half an inch at the front end, making an excellent alighting-board. When these slabs are leveled on good solid ground they stay in place, and do not sink down nor get out of level. They are reinforced both ways with old barbed wire. The expense was not over 15 cts. each, including my time for making.

Dupont, Ind.

A VISIT WITH HAWAIIAN BEE-KEEPERS.

BY E. F. PHILLIPS.

It was the writer's privilege during the winter of 1908 to visit the Territory of Hawaii and to meet the bee-keepers of the islands. These islands, which form one of our outposts, are, from a bee-keeping point of view, of exceptional interest. The methods of management, the honey sources, and the tropical conditions under which the work is

carried on, are things entirely new to one who has studied bees only under our mainland conditions, and there are many things to be observed there which will probably interest other commercial honey-producers.

The area now covered by apiaries does not equal Rhode Island in size, nor is all the available area as yet covered. The bee-keepers are at present extending their operations, and it will be but a few years before they make a larger showing. They have already shown that they are progressive, and their methods of management are thoroughly modern.

While there is a season during which there is less honey coming in, there is no definite honey-flow such as is found in most places on the mainland. On the contrary, there is something coming in almost every day in the year. As a corollary the flow is not so intense but the bees keep right on at a moderate rate adding to their stores. The old tradition that bees in the tropics do not store excess honey is certainly disproven by results on the islands.

The main floral honey source is the algaroba-tree, closely related to the mesquite of the Southwest. The honey is white, and granulates rapidly, resembling most our alfalfa honey. During the spring and early summer (if we can designate seasons in such an equable climate) the bees work vigorously on the algaroba. The most interesting

phenomenon, however, is the second large honey source. The bees of the islands annually gather tons of honey-dew honey from the secretions of the sugar-cane leaf-hopper. Such an extensive gathering of honey-dew to form a commercial product is a thing which is unknown to the writer in any other locality. This honey-dew honey does not resemble the honey-dew honey generally found on the mainland. It differs in flavor, and, when relatively unmixed with floral honey, does not granulate, even after a period of years. This product is sold as "honey-dew honey," and finds a ready market among bakers. It could not be used as a table honey, and the producers make no effort to use it in competing for that market. Since leaf-hoppers are always present in numbers on the cane, the flow from this source is practically continuous. During the algaroba flow, or when other nectar-producing plants are available, the bees prefer the floral nectar.

According to the decision of the Pure-food Board, the product made by the bees from the secretions of insects may be sold as "honey-dew honey." It is a natural product gathered by the bees, and unmixed with any added sugars. Since there is a market for this product there is no reason why it can not be sold provided it is so labeled that the buyer knows what he is using.

A point of considerable interest in Hawaiian bee-keeping is the fact that there are few small bee-keepers and almost no amateurs on the islands. Bee-keeping is a commercial industry, and most of the bees are owned by corporations. By such organization one competent bee-keeper can superintend the work with several thousand colonies, the actual manipulation being done by laborers. This reduces the cost of production, and such a plan seems to foreshadow the future of mainland commercial apiculture.

The Hawaiian bee-keepers are extremely fortunate in that they have among their bees no contagious disease. Either American or European foul brood would cause enormous losses under such tropical conditions, and it is to be hoped that effective quarantine regulations may be established to prevent the introduction of these plagues which annually cause so many thousands of dollars' loss on the mainland. Steps have already been taken in this direction. It is doubtless true that the bee-men of Hawaii would control a contagious disease as good bee-keepers do elsewhere; but if they can prevent the introduction of the causes they will be relieved of much troublesome labor.

Aside from these special features, Hawaiian bee-keepers face the same problems as do their mainland co-workers. They are good examples of what a progressive bee-keeper



CONCRETE HIVE-STAND AND ALIGHTING-BOARD.

should be, and should have the cordial co-operation of the mainland leaders in apiculture.

Washington, D. C.

TRANSFERRING FROM AN OLD STUMP TO A MODERN HIVE.

BY CHARLES M. KOLB.

The engraving shows an oak stump and a Danzenbaker hive, representing the old and the new home of my bees. I found the colony in November, during the gunning season, and in February found that they had wintered well. Up to this time I had never handled bees nor seen a hive, except at a distance, but I wished to take them home; so I tacked a piece of wire cloth over the hole in the stump, and cut off the trunk of the tree above the hollow part. I then sawed off the stump close to the ground, turned it over and tacked a sheet of tin on the bot-



COLONY TRANSFERRED FROM A STUMP INTO A MODERN HIVE.

tom. After hauling it home, a distance of four miles, on a wagon, we placed it in the yard on a flat stone, and removed the wire cloth from the entrance. The next day being warm the yard was full of bees.

Later, my friend and I sawed the stump in two, took the combs out and filled six of the Danzenbaker frames with brood and honey, tying them in with string. We placed the hive where the stump had stood. For three days and nights the bees worked cleaning house and making repairs, removing dead brood and rotten wood.

We found that we had the hive located too close to the sidewalk, so we moved it forward three feet every day, and on the fourth day we reversed the entrance so that it faced the old location. In all, we moved the hive 75 feet to the rear of the yard and the bees followed it without any apparent concern. Occasionally one would drop to the old location, circle around, and then shoot into the hive.

Haddonfield, N. J.

DO HONEY-BEES PERFORATE THE NECTARIES OF FLOWERS?

BY JOHN H. LOVELL.

Mr. Root:—After reading your comments on page 214 I am inclined to think that you are right, and that there is at present no satisfactory evidence of *honey-bees* perforating the nectaries of flowers. I would use the term "nectary" in a strictly technical sense; for, as I will show, honey-bees do pierce succulent tissue. Perhaps they have not sufficient strength to puncture the walls of nectaries, which are frequently tough and thickened. I have been unable to find any reliable records of honey-bees biting holes in flowers. In one instance, as mentioned in my paper, I observed a honey-bee apparently attempting to puncture the spur of the touch-me-not; but it is not all unlikely, as you suggest, that there may have been already a small hole, which it was seeking to enlarge. The holes were, however, undoubtedly made by bumble-bees, for the beetles and spiders seen in the flowers were far too small and few in number for this purpose. The number of flowers with the spurs punctured was very large.

On the other hand, there is not the slightest reason to doubt that bumble-bees frequently puncture flowers. They have been seen to do so by many observers besides myself, as Mueller, Knuth, etc. In the case of the scarlet runner, the flowers were visited only by bumble-bees and honey-bees, and were promptly punctured as fast as they matured. If we exclude the honey-bees, there were no other insects present, except the bumble-bees, which could have done this work. Wasps do not visit these flowers since they are short-tongued insects, and the nectar is inaccessible to them. While wasps can masticate other insects, I have never read of an instance of their puncturing flowers. In all the other cases mentioned in my paper the bees referred to are bumble-bees.

I have just examined the maxillæ and mandibles of a worker of the honey-bee under the compound microscope, and compared them with the same mouth-parts in a worker of *Bombus terricola*. While they are essentially alike, smaller differences can be easily discerned. The lacinia of the bumble-bee appear narrower, more rigid, and more acutely pointed, while its mandibles are toothed at the apices, and those of the honey-bee are entire. Still if the honey-bee is strong enough I should think it might be able to puncture floral leaves; but this is perhaps the difficulty—it is a less powerful insect than the worker, and not to be compared with the queen bumble-bee, and it probably has not sufficient strength to puncture nectaries. The maxilla of a bumble-bee or honey-bee is composed of two joints—a basal part called the stipes or stipe, and a blade-like terminal part called the lacinia. According to Mueller the lacinia are sharpened at the ends for the purpose of

piercing succulent tissue. Now, while the honey-bee may not puncture nectaries, it certainly does pierce with the laciniae succulent floral tissue.

There are a number of plants which produce succulent tissue instead of nectar into which bees and lepidoptera bore for sap. In the common laburnum (*Laburnum vulgare*) there is a round fleshy swelling at the base of the standard (a large, upright, showy petal well shown in the sweet-pea), which bees and butterflies pierce for the abundant sap. There are also several species of orchis (*O. morio*, *O. maculata*, etc.), in which Darwin, though he examined them repeatedly under the most favorable conditions, was never able to find "the smallest bead of nectar." Sprengel called them "sham-nectar producers." But the inner membrane of the flower-tube is a very delicate structure, and beneath it there is a copious supply of fluid. Mueller observed a honey-bee pierce this tissue a number of times. "On June 13, 1870, a hive-bee flew before my eyes into a flower of *O. latifolia*. It pierced the inner wall of the spur several times with the points of its maxillæ, and then flew away, bearing the pollinia on its head to a flower of *Lycnis flos-cuculi*. I gathered the flower immediately after the bee left it, and found the punctures visible from the outside as small bright elongated specks."

The flowers are more frequently visited by bumble-bees, which also puncture the tissue. "It is certain," says Mueller again, "that the bees pierced the delicate inner membrane and sucked the included fluid. They doubtless pierced the tissue quickly and easily with the points of their maxillæ." Mueller's observations are confirmed by those of Darwin.

The ability of purely suctorial insects to pierce plant tissues is much greater than is generally supposed. Darwin tells of a moth in Queensland, Australia, which with its wonderful proboscis can bore through the thick rind of an orange. At the Cape of Good Hope the moths and butterflies are said to do much injury to peaches and plums by puncturing the unbroken skins. Darwin also observed a fly (*Empis livida*) pierce the tissue of an orchis. The boring for sap among insects, says Mueller, is much more usual than was formerly supposed.

I have examined a great number of perforations in flowers belonging to various species, and would divide them into two classes—those made by the mandibles, and those made by the laciniae of bees. When the nectary is larger, as in the columbine, two small holes will often be found side by side, made, I believe, by the pinching of the mandibles together, unless each lacinia is capable of making an independent hole. But when the nectary is smaller and linear, as in the touch-me-not, there will be found a narrow slit made by the ends of the maxillæ. Very likely these latter organs are also used on the larger nectaries also. During the coming summer I hope to determine the exact behavior of both bumble-bees and hon-

ey-bees in regard to puncturing the nectaries of the scarlet runner. It would seem as though bumble-bees, being the stronger insects, especially the queens, make the holes, and that the weaker workers of the honey-bee observe and make use of them.

Waldoboro, Me., April 6.

SWARMING CONTROLLED BY REMOVING BROOD.

BY LEO E. GATELY.

While it is by no means impossible during a good year to double a given number of colonies, and at the same time obtain an undiminished amount of surplus honey, many wish to avoid increase, and in all large apiaries it is necessary to control the tendency of the bees to swarm.

By keeping the force of colonies intact throughout the season, it is not infrequently supposed that they can be kept in ideal condition for working in section supers. Not only is such a supposition only partially true, but to prevent such from swarming, it is at the last usually necessary to deprive them of all or most of their brood by shaking or otherwise.

There are methods whereby, with small labor and without so much as ever seeing a queen, swarming can be readily kept under perfect control.

Two or three weeks before the flow, or sooner if there is danger of swarming, a third section, filled with sheets of foundation, is placed between the two divisions of my brood-chambers. A week later the bees are smoked out of the upper brood-section, and it is replaced by a super. In another week the lower section is removed, and replaced by one containing foundation or empty combs. If needed, a second super can at this time be inserted.

Any plan that rids the hives of all brood kills swarming as effectually as though it had occurred naturally. As described above, it is taken so gradually that the bees do not become dissatisfied and sulk, and there is left at all times sufficient young larvæ to prevent swarming out, as frequently happens with shaken swarms.

With deep frames, as soon as the hive is filled with bees, a second story, usually consisting of one or two sections of my divisible hive, according to the strength of the colony, is placed above. Immediately upon the occupancy of this second story by the queen it is removed to a new stand, and the old brood-nest supplied with a ripe cell.

The return of old bees from the hive placed upon the new stand so depletes its force that all danger of its swarming is removed should it be kept for increase. Now, by placing an excluder under the second story ten days previous to making the division, the old brood-nest is absolutely prevented from swarming, as by that time there will be no larvæ left of a suitable age for starting cells. Usually, however, such precautions are un-

necessary if sufficient super room is given the old brood-nest. By either plan there is absolutely no handling of frames, and the apiarist is independent of any whim of the bees as to their swarming. In a large apiary no professional honey-producer would at the present day think of allowing natural swarming, uncontrolled; and the above methods will especially meet the requirements of all those who wish to avoid the discomfort of watching for even first swarms.

Ft. Smith, Ark.

THE TWO-POUND SECTION OF FORTY YEARS AGO.

BY H. R. BOARDMAN.

Years ago, although I had been using movable-frame hives, I had as yet nothing better than mere empty boxes for my surplus comb honey. I began trying to find something more convenient and more elegant, and the sectional honey-frame was the outcome of my thought. I used these for all of my comb honey for several years. They were plain nailed frames of such a size that four of them would fit in one of my large deep brood-frames. They were prepared with plain wax starters, and were tiered up in a regular hive-body over a brood-chamber. These were quite an improvement, and the best in this line that I had then found. A box to hold the set of sections soon followed, which also proved to be very practical. I made a few of these at first, and soon afterward ordered material for a large number. The interchangeable feature proved valuable in many ways. Four of these boxes covered a hive, and the sections held from $1\frac{1}{2}$ to 2 lbs. of honey each.

I do not think that I ever produced finer honey or secured better crops than I did in these original sections; nor have I been able to make my business pay any better than it



TWO-POUND SECTIONS AS USED BY MR. BOARDMAN FORTY YEARS AGO.

The small boxes are nucleus hives for queen-rearing, in which these large sections were used as frames.

did then. My first shipment of comb honey was in these sections, for, of course, I had then never heard of a section that would fold, of comb foundation, nor of separators. Well, I shipped 300 lbs. to W. P. Southworth, in Cleveland, at 25 cts. a pound. This looked like quite a deal to me then. But the honey was reported in bad shape, as it was broken in transit, so that I had to take 20 cts. I have often thought since that I would not consider it a great misfortune now that would compel me to accept 20 cts. a pound for my honey.

When the queen got up into the upper part and used these sections for brood-rear-

ing, the idea of putting these small combs in the boxes and using them for nuclei was at once suggested. When the queen which had been placed in the nucleus hive became fertile and commenced laying, the sections were slipped back into the frame, which frame, with the bees and queen, was put into another hive that contained no queen. For several years I raised queens for my own use, and also a few for my friends, making use of these "baby nuclei." This was only a side issue with me, however, as I was not a professional queen-breeder and never have been.

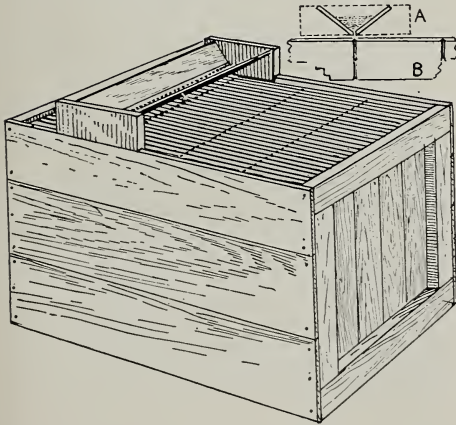
Last summer I brought these fixtures out from the dust and cobwebs of the shop attic, and used them again as I did nearly forty years ago. The illustration shows the small nucleus hives and the manner in which the sections were inserted in one of my large frames. The removable side of one of the hives is also removed, showing the sections of comb honey and also others used for brood-rearing.

Collins, Ohio.

A SECTION-DAMPENER.

BY WESLEY FOSTER.

We have used all sorts of things to dampen our sections, from a dipper to a syringe; but this trough arrangement does the work better than any thing else we have tried, and much more quickly. The sections are left in the crate, and the perforations in the bottom of the trough are made the same distance apart as the grooves in the sections,



approximately one-sixteenth inch. Warm water is used; and when one row of grooves is wet, the trough is moved over to the next row. The trough would work somewhat better if the sections in the crate were all turned one way, then every groove would be almost certain to be dampened clear to the bottom of the crate.

Water is used pretty freely, and it is best to dampen the sections several hours before folding them, so the water not absorbed will

run off, and the sections that get a too generous wetting will have time to dry out a little.

Boulder, Colo.

[This scheme for dampening sections would be all right, but we should think it would not work much further than a single row deep.—Ed.]

IS A NON-SWARMING RACE A POSSIBILITY?

Is the Swarming Tendency Due to Habit or Law?

BY DR. A. F. BONNEY.

If for no other reason than that some of my bee-keeping friends might be happy, I hope the dream of a non-swarming strain of bees may become a reality; however, the more I think of it the more doubtful it appears.

There has been very much written on the subject, I know. I should not be surprised to learn that the ancient Egyptian bee-keepers voiced a wish—but, wait! "It is not our knowledge but our ignorance of the past which constitutes the pride of the present," so perhaps that old-time folk knew more about bees than we do. They trained cats to go into the water to catch fish, though now Puss has a fit if she gets her dainty feet wet.

The first question which comes to my mind when I get to discussing this question is: "What is swarming?" It is not atavism, for that is merely a reversion to ancestral characteristics, a returning to shape, color, or other physical characteristics; nor is it instinct, for that is a special innate propensity in any organized being, but more especially in the lower animals, producing effects which appear to be those of reason and knowledge, but which transcend the general intelligence and knowledge of the animal. Intuition is entirely an unconscious mental process, so it is not that. It is not heredity, for that is almost synonymous with atavism, the transmission of mental and physical characteristics from parents to offspring. I believe this was fully understood by the old philosophers. "I will visit the iniquities of the fathers upon the children, even to the third and fourth generation of them that hate me."

Dr. Jones, in advertising his non-swarming discovery, alludes to the "swarming habit of bees." But is it a habit—a usual or customary mode of action, something which may be acquired and afterward laid aside? "Habit," says the dictionary, is "a mode of action established by use so as to be entirely natural." It would really seem that the definition would apply to this characteristic of the bees; however, the word does not seem to fit entirely, so I ask again, and in all seriousness, "What is swarming?"

In time past, many things were believed which we now smile at. That the lion would not touch the true prince was as implicitly believed a few generations ago as is any church dogma to-day. The world was

flat; slavery was a divine institution. Shall we in another generation look back at the idea of a non-swarming strain of bees and smile indulgently? That many bee-keepers long ardently for such a thing, and believe it possible, is not evidence, logic, nor reason. Consequently we are free to discuss the matter fully and freely.

What is swarming? It is something which is to the bee what family-forming is to human kind? That the young stay and the old go from the hive, and the young go and the old stay in the human home is only a different way of obtaining the same result, if, mind you, we may argue from man to bee and bee to man. Swarming, then, is not a habit with the bees any more than it is a habit for the young couple, impelled by love, to go, gladly and unafraid, into a new world and to a new home. Unsex them and they would not mate and leave the home. No: swarming is not habit; it is law, a part of the sexual plan of the bees. It may even be that the almost sexless workers take this way of mourning their lost queenhood. It is law; and he who violates God's law perishes. Do the bees commit such a violation when they fail to swarm? There are men who do not marry, and there are bees which do not swarm. Let us suppose there were no marrying (a condition said to exist only in the other world); how long would the human race exist? Suppose all the honey-bees in the world were to die save one swarm (a not impossible idea), and that these, for any of many reasons, failed to swarm, and that in the dead of winter the queen died. The unfortunate insects could not fulfill the law, and they would perish utterly; and no one may ever know how many types of animals, birds, and reptiles have become utterly extinct from inability to comply with the law of propagation of kind.

By breeding, selection, we influence the shape, size, color, and even the disposition of the lower animals, and to some extent the characteristics of the insects; but in working with the chickens, if we keep the pullets shut away from the males the eggs they lay will not be fertilized; and if this were persisted in the chicken family would soon vanish. God cursed Onan. Lot's daughter knew the evil of non-swarming. In olden times a barren woman was despised, for perpetuation of kind was a law highly esteemed before these days of swift and easy divorces and race suicide.

Thus it will be seen that, when we take up the study of the exact meaning of words, habit is not the one to apply to the swarming of bees. Rather it is a law peculiar to them. Humans migrate, and that is the only human act which bears any relation to swarming.

It is, I think, permissible to discuss this matter. Were it possible for us to get the queen to mate in the hive, or to have two or more queens in the hive until a new swarm were ready to fly, we might have some hope of creating a non-swarming strain; but we can not; and to attempt to we must upset,

not a habit of thousands of generations of bees not to go contrary to instinct or inherited traits, but law, and one of the fundamental rules of their being. However, there is nothing in the economy of the human to compare with this law of the little people; hence we can have no conception of their mental processes, *if* they have reasoning faculties as sometimes seems. Having nothing but subjective evidence it is a question if man will ever be able to reduce this tendency to swarm; for, consider keeping a swarm of bees in a hive, room, or cave, five, ten, or even fifty years without swarming is not evidence that we have destroyed the tendency to do so. It merely means that we or our environments have put the bees into a condition where it is not necessary for them to swarm. They probably had more comb than they would ever fill, and simply went on superseding as the age of the queen required. Moreover, it is very likely that in cave or house room there were more than one "swarm," two or more queens. This is reasonable from what we know. Even if we did keep a lot of bees as above described for scores of generations of bees, is it not a fact that, if they were placed in normal surroundings again, crowded for room with a big honey-flow on, they would at once swarm? They certainly would, for *they are wild by nature*. Man has never domesticated them. In all the thousands of years he has been handling them he has not made a start to tame them or bend them to his will. Give a swarm the nicest hive, with every thing an honest bee might reasonably be expected to ask, and when they come to swarm they will leave the yard, seeking a dirty rotten tree, even though there were a dozen empty hives in the yard they left.

I have expressed the opinion that a certain method of preventing swarming might be used to overcome slowly the tendency of bees to swarm. However, I now think, and I believe time will prove the correctness of my conclusions, that even with that carried on for scores of generations of bees they will swarm just as soon as they get from under man's control, because they *are wild by nature*. They were created so, or developed to be. They are impelled by a law of which they have no knowledge and which they have no wish to violate. It is a part of their sexual plan, just as home-making or family-forming is part of the human plan, of which the young folks have no knowledge. They only know they are in love, but that is quite sufficient.

A man came to me once with an invention. He proposed to wind a rope on a shaft. At the rope's end was a weight, which, falling, unwound the rope and thus gave power to do work. He found in time that the falling weight would lift less than the man could lift in winding up the rope. Many of my brother bee-men are trying to develop a strain of non-swarming bees with the idea that they are dealing with a *habit*. Are they?

Buck Grove, Iowa.

AN ANTI-SWARMING DEVICE.

Additional Clustering Space Furnished without Altering the Hive or Otherwise Changing the Equipment.

BY WALTER S. POWDER.

Through the courtesy of Mr. H. Junge, of Cumberland, Ind., I am submitting his description of a new device which can be added to any hive, thus making it a non-swarming hive. To get an idea of the construction, just imagine a super filled with fences, using narrow cleats on the fences to maintain a three-sixteenths bee-space. The device can be arranged at the entrance, or it can be placed beneath the brood-chamber of any hive. Mr. Junge informs me that every experiment has been a success thus far.

We have long known that a very deep entrance to a hive would do much to retard swarming, and Mr. Junge has taken advantage of this idea, but at the same time permitting an abundance of ventilation, which is very important during a honey-flow. Personally I should prefer placing the device beneath the brood-chamber, and it has the advantage of being inexpensive and very neat.

Indianapolis, Ind., Dec. 1.

[The following is Mr. Junge's description of his device.—ED.]

The patent application on my device was worded so as to cover it whether attached to the hive above, below, or at one side of the brood-chamber. I am not yet certain where it should be located. Fig. 1 is a bottom view of the device, arranged to be placed under the brood-chamber. This was the construction that I first thought of. For a trial it was placed under an eight-frame brood-chamber, the colony in which was cluster-

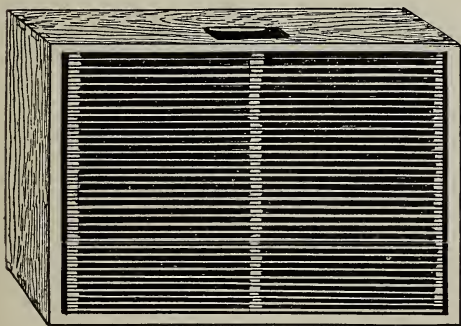


FIG. 1.—Junge's anti-swarming device arranged for placing under the brood-chamber. Patent applied for.

ing out heavily, and, to all appearances, was ready to swarm. Shortly after the change was made, the bees stopped clustering on the outside of the hive, even during the hottest days, and showed no further inclination to swarm. This colony made a better showing than most colonies in this neighborhood.

Fig. 2 shows another form of the device, designed for attaching to the front of the hive. If this will do the work as well as the one under the brood-chamber I am inclined to believe that it is the better construction

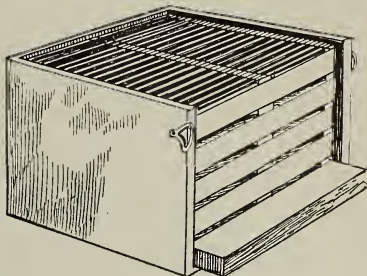


FIG. 2.—The anti-swarming device for use in front of the hive.

of the two for the following reasons: It can be much more quickly attached than the construction shown in Fig. 1, and there is no necessity of using smoke or otherwise disturbing the bees. It may be left on the

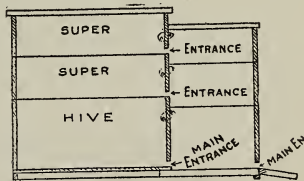


FIG. 3.—A provision for use with plural entrances.

hive permanently. It is separated, of course, from the hive proper by the front wall of the hive, so it could not possibly make it more difficult for the bees to keep warm in winter. It will also, to a certain extent, check sudden changes in temperature. Furthermore, those who prefer plural entrances can adopt this plan very easily; for with every comb-honey super put on the hive a corresponding slatted super of like height can be put over the anti-swarming attachment, as shown in Fig. 3. In this way there are plenty of entrances, but still there is no chance for a draft, and there is, besides, but one main entrance for the bees to guard.

Cumberland, Ind.

VENTILATION TO CURE SWARMING BY THE DR. MILLER PLAN.

Is the Cure Worse than the Disease?

BY O. B. METCALFE,
The New Mexico Chap.

Dr. Miller discusses "ventilation to prevent swarming," p. 691, Nov. 15, 1909, and the editor calls for reports. This question of ventilation is no new thing with Dr. Miller, and he has had me trying it, more or less, for the past three seasons. In a way, I am now about to turn against his plan.

Experiments and observations have convinced me that swarming may be much reduced by ventilation; but let us go slow with this method of swarm control, lest we blindly administer a remedy which is worse than the disease, for I have also noticed that a colony which is given as much as a $\frac{3}{8}$ entrance seldom stores the surplus that one does when kept well shaded and left on a $\frac{3}{8}$ entrance throughout the season. Now, the question I am raising is, "How does ventilation prevent swarming?" If I understand the swarming impulse, it is *incited* by the bees filling their hive with honey and brood, while conditions continue favorable for rapid brood-rearing, and is *checked* either by giving the colony more room or by stopping the queen in any way from laying at her best. Now, ventilation certainly does not add room, so perhaps it retards egg-production, and I think I have been able to note that it does. Who knows for sure? Until I know more about it I shall restrict ventilation experiments to a few hives, and give the most of my bees store room and brood room. When they will not make comb honey they may make extracted; and when a colony gets the swarming fever so badly that it won't stay at home, even to make extracted honey, it shall have a nice young queen, unless I desire increase in that particular yard.

Mesilla Park, N. M.

[This is a live and important subject. We should be pleased to hear from others.—ED.]

IS THERE A "BEST BEE"?

Have the Italians been Given too much Credit?

BY D. M. MACDONALD.

I have been a student of American bee literature for about twenty years; and during the last dozen of these, little if any thing has escaped my eye. The feature of all others which has impressed itself most on my mind is the all but universal cry in favor of Italian bees. The pean of praise runs something like this:

"I have foul brood in my hives. What can I do to rid myself of it?"

"Get Italians," is the prompt reply.

"Wax-moth troubles me a lot. What is the best cure or preventive?"

"Italianize your bees, getting rid of the blacks," comes the inevitable answer.

"My bees seem to be working into scrub stock. What can I do to energize them?"

"Purchase Italian queens," comes the advice sure and quick.

"My bees are so vicious that working among them is becoming a terror to me. What would you advise me to do?"

"Get Italians, and you can handle your bees as if they were flies."

Now, my object in noting all this is not to rail against Italians. They must be good bees in America and for America; but I ob-

ject to having it so reiteratedly dinned into our ears that they are the *only* bee, and that all other races are anathema.

A good many years ago I put in a plea for blacks, and recorded some twenty points where, in this locality, they took precedence of their cousins. You were good enough to extract some of my points and reprint them in GLEANINGS, but with some remarks added which read very much like a point of interrogation after each. Four of them were similar to the quartette I have named in my opening sentences. I will deal with each.

Moths are at times an undoubted nuisance. In your A B C you give Italians as both a preventive and a cure. I raise no question of your correctness; but I do to the fact that you confine the extirpation to the influence of one class of bees. I may point out the fact, on the other side, that during over twenty years I have never had a comb mutilated by the depredations of wax-moths, either *Galleria* or *Achroia*; nor do I know of *any* bee-keeper, who attends to his bees, who gives even a passing thought to this at times deadly enemy. Yet all over the three countries—England, Scotland, and Ireland—the blacks stand in the ratio of 80 per cent to 20 per cent of all other races. The secret of immunity, therefore, does not lie in the possession of Italians. You will find it on page 165 of "Cowan's Bee-guide," last line.

"If hives are kept strong in bees the wax-moth need not be feared." I do not claim a monopoly of this wisdom for this side of the Atlantic, because if you turn up Quinby (1866), page 244, you will find that he italicises the fact that "only when we know that all our stocks are full of bees" are we safe from the incursion of this troublesome pest. Then we are immune whatever the race of bees may be.

If we have had one (so called) fact more than another emphasized over and over, it is that Italians can cure foul brood. I know that they have brought the fell disease both to myself and others, but I have yet to learn that they are any more preferable than our own blacks in warding it off or aiding in effecting a cure when it finds a lodging in any apiary. GLEANINGS, as consistently as any other American journal, has extolled the virtues of Italians in working a cure; but I note of late that its editor is taking broader views, as on page 89, where he says, "It is possible that, in certain localities, there is a strain of blacks that will resist the plague as much as or more than the Italians." That is just my contention. Dr. Miller, p. 100, gives corroborative evidence: "Any extra immunity is derived, not from the fact that they are Italians, but because of their extra vigor. If you get that same vigor in any other bee you will get the same immunity." Our blacks, I maintain, have that vigor, and so have the well-bred queens of the same race reared under proper management in Germany and Switzerland. In very few countries has foul brood been put under subjection more completely than in the lat-

ter country, and, working for its suppression, their inspectors find black blood no detriment. Of the two races, the preponderating vote would be in favor of blacks.

Perhaps all bees have a tendency to revert to scrub stock at times; but of the three or four chief races, blacks are that way the least inclined. Take Carniolans, Italians, or Caucasians, and what a fight there is to keep the stock pure, with even a moiety of blacks in the neighborhood. Does not that prove blacks to be the predominant race? In a very few generations all the golden color vanishes. Here the Italians are a "soft" race. Just recently you yourself said of yellows, "Experience shows that bees bred for color will not stand as much cold as the dark strains that appear to be more nearly the normal type of the race." Mr. Byer has repeatedly spoken a good word for the darker races, and in the February *American Bee Journal* he says that, for "good wintering and for brood-rearing in the spring under adverse conditions, Italians are simply not in it." My own experience is certainly in favor of blacks building up and keeping up their strength more uniformly than any other race, and they *don't breed untimely*; consequently a smaller colony will yield a larger surplus. Given a batch of young black queens and a like number of Italians, the weeds in the last lot will number three to one of the others. While we get more powerful individual stocks of Italians than blacks, yet all over an apiary a higher percentage will be scrub stock, and far more stocks will be found queenless from no apparent cause.

Much has been written on the subject of vicious bees. No race is gentler and more equitably tempered than Carniolans, under almost any conceivable set of circumstances. Some Caucasians are gentle, but others are the reverse. All agree that Cyprians and Holy Lands are about as cross in general as bees know how to be. Italians (and, as a rule, the first cross) are found on the whole to be thoroughly amenable to manipulation in this country; but further than that we had better not inquire. Italians, on first opening the hive, cling to the comb and appear quieter than blacks, which appear more excitable; but as the manipulation goes on, give me the blacks almost every time. Moses Quinby describes this trait: "I can often avert a black bee in time to prevent a sting; but he must be a skillful swordsman who would thus parry the lightning thrust of the Italian." A writer on page 109, *GLEANINGS*, says, "The crossiest colony we have are yellow Italians, and the gentlest are dark hybrids."

For comb-capping and high finish of section honey the blacks are unexcelled. They are excellent nurses, fairly prolific, not given to excessive swarming, admirable defenders of their hives, thoroughly suited to our variable climate here, splendid winterers, raise brood only in season, and are long-lived; and they *do* resist the wax-moth and aid us in curing foul brood; are gentle to handle, and

keep up their vitality, thus avoiding scrub stock.

Banff, Scotland.

[Our correspondent has made an exceptionally strong plea in favor of the black race, or at least that race as it is found in Europe. If any other correspondent or reader has found the black bees are better for his purpose, and has hesitated to say any thing about it because he thought the editor might be prejudiced, we desire to say to him right here and now that our columns are open to further discussion of the subject. If we are prejudiced in favor of Italians it is because the great majority of the American bee-keepers are in the same boat. It is possible and even probable that local conditions have shown that the Italians are better than the native American blacks. We say *American* blacks, because, apparently, the English bee is superior.

The great preponderance of this dark race in "Merrie England" may be due to the fact that a very large number in that country do not use the modern frame, but the old-fashioned straw skep. In saying this we do not mean to suggest that the English bee-keepers are not as progressive as those in America—far from that; but there are many cottagers in that country who can not afford any thing better than a straw hive. Blacks being native bees they would naturally use them.—ED.]

THE PIPING OF A VIRGIN WITNESSED.

The Sound Not Made by the Wings.

BY F. DUNDAS TODD.

My friend Mr. Russell recently had the following experience: In one of his hives were several queen-cells; so one day he opened it with the intention of securing a few for nuclei. On taking out the first frame he saw a young queen on it which he at once secured. On lifting the second frame he heard the call of a young queen, and at once spotted her. Understanding there was some little dispute as to how the sound was produced he watched her very closely, and noticed that the wings were perfectly still. The call evidently was emitted from the thorax. In his boyhood, thirty years ago, his father had owned several skeps, and at that time the piping of the young queens had interested him greatly, so he watched this one for several minutes in order to find out the meaning of it. This virgin ran along the comb, about an inch at a time, stuck her head into an ordinary brood-cell, then emitted the call. He watched her repeat this performance at least a score of times. To confirm his observation he called his wife, who agreed as to the details.

Mr. Russell's supposition is that the virgin was looking for her rivals. The important point of the observation is, I take it, that the wings were perfectly still, thus showing they were in nowise concerned in the production of the noise.

Victoria, B. C.

Heads of Grain

from Different Fields

NATIONAL ASSOCIATION.

The membership to-day, March 26, is 3790. The President's mark of 5000 is fast coming in sight. Let the good work go on.

Information Bulletin No. 15 has just been mailed to members. This is of value only as each member uses it. To many it is worth the dues of several years.

The second edition of "Bee-keepers' Legal Rights" has just been mailed to the members. It is a reference volume which every bee-keeper should have in his library. Paid-up members get a free copy. There are none for sale to outsiders.

The winter losses of bees are quite heavy in some places. Some report a loss of three-fourths.

The present honey prospects are good except in Southern California, where they have had no rains for nine weeks.

Each new member gets a copy of the 1909 annual report free, as long as the supply lasts. There are not many left.

R. L. Taylor, Chairman of the Board of Directors, has been having the grip.

If each National member would work to get new members as our recent candidate for president (Mr. Thomas Chantry) has done, we would number 5000 by the close of the honey harvest. Why not do so?

If our members who produce extracted honey will follow the advice given in Information Bulletin No. 15 there will be a great demand for honey, with hopes of better prices next fall. The bulletin contains the following on this subject:

GREAT DEMAND FOR HONEY.

"I have devoted much time to discover why so many complain of no market for their honey. I have asked fifteen wholesale dealers why honey sales were slow when other foods found ready sale at high prices. I also asked bee-keepers who buy tons of honey besides their own for bottling, and also asked many who used to be extensive honey-eaters why they have dropped it from their daily food. Almost every one replies with this answer:

"Good well-ripened honey, sealed by the bees and matured in the hives, is always in demand at fair prices; but this thin stuff, extracted before it is ready, before it is well ripened—that will sour—that never has either flavor or body—that is what spoils the market for honey."

"Through the Information Bureau I have had sent me many offers of honey to sell. For several such lots I found sales, and later received word from the purchasers that the thin honey had no body or flavor, except souring. If every member of the National Association will promise me that *all of his honey will be ripe, capped-over honey* before it leaves the hives, he will have a market which he can never supply. Our Association can never band the honey of its members until this is done."

By the time the members of the National get their honey ready for market this year I hope to be able to have new patterns of honey-labels for their special use.

On the evening of March 31, as General Manager N. E. France, with his wife, was mailing the last buggy-load of Bee-keepers' Legal Rights, they met with serious injuries by another team running into their buggy, upsetting it and causing a runaway.

Platteville, Wis.

N. E. FRANCE.

A MODIFIED ALEXANDER PLAN FOR MAKING INCREASE.

The main honey-flow, which is from crimson clover, comes very early in this locality, beginning the last of April and extending until late in May. Our swarming is in March and April. I prefer to have my bees all in one apiary, but am compelled to divide them into four yards in order to find a good bee-range by actual test.

To head off swarming and to secure increase at the same time, I wish to try a combination of the Alexander and brush-swarming plans. When a colony makes preparations for swarming I intend to prepare a hive-body on the old stand, as suggested by Mr. Alexander, and put a queen-excluder over

it. The old hive-body I will set at one side, then brush all the bees before the new hive on the old stand; and when they have all gone in, place the old hive-body over the excluder long enough so that the bees will care for the brood. I will then remove the old body and set it at the side of the old stand, with the entrance turned the other way. In 21 days I can find the new queen in the old hive, cage her, and brush nearly all the bees in front of the new hive on the old stand, then move the old hive containing the new queen and her few bees to a new place as a nucleus, and finally release the queen.

By this plan, nearly all the strength of both hives will be given to the colony on the old stand in time for the clover flow. This will give the new queen with her nucleus until July to build up in time for the sourwood flow.

Will this work all right, or should I follow the ordinary plan of brush swarming? My bees, being nearly all hybrids, are very cross, and boil over when I open the hives. I am a poor hand at finding a queen.

Biltmore, N. C.

W. N. RANDOLPH.

[The plan as proposed above will be perfectly feasible; indeed, if we are not very much mistaken, Mr. Alexander himself suggested this modification in one of his articles. The shaken-swarm plan can be varied materially to suit local conditions and certain plans that the apiarist may have in view. If he does not desire increase, then he can put the second drive of bees in with the first after the brood has all hatched out. If he desires increase, then he should, of course, move the parent hive to some other location. By your plan you secure increase, and at the same time give all the brood, after it hatches out, to the first drive.—ED.]

BLACKS AND HYBRIDS SWARM LESS THAN ITALIANS.

I must add my complaint to that of Mr. W. C. Mollet, page 79, as to the excessive swarming of the Italians. My bees are in ten-frame hives. I always use baits in sections, and give the entrance an inch or so by the width of the hive in hot weather. I have had Italians of two different strains—southern-bred and red clover, and found the same thing in both cases—a mania to swarm. They begin before there is honey enough to go into the supers, and keep it up. Last season I undertook to prevent swarming entirely by removing queen-cells, but more than half swarmed in spite of me. A cell overlooked or a day's delay, and out they would come. Most of the bees in the neighborhood are dark hybrids, with perhaps a few pure blacks. The record for most honey per hive, so far as I know, is held by a colony of dark hybrids which has swarmed not at all in seven years, and has only a $\frac{3}{8}$ x 8-inch entrance all the year round. Others, with similar hives and bees, have had very little swarming, while a neighbor who never got supers put on any of his had only a moderate amount of it. As a new swarm usually makes little or no honey here, and a hive which has swarmed once not much, this is quite an item. By putting back swarms and by careful attention I have been able to get a greater average per hive than others; but individually they have been outdone by those having little or no Italian blood. So far as I know, the experience of others in these parts has been the same. I suggest that, in this country as in Europe, there are places where the blacks are better than the Italians.

Concerning whitewood (poplar) honey, it is the best we know anything about here; but we get only enough of it to make us hungry nowadays.

McConnelsville, O., Feb. 10.

H. D. TENNENT.

[See Mr. Macdonald's article, p. 296.—ED.]

HONEY-DEW ALL RIGHT FOR EATING.

Is it not a fact that, when the honey-bee comes along and gathers this excretion into its honey-sac and then empties it into the cell in the comb, a change takes place, and that this excretion becomes honey-dew honey? and, through this change, is not all waste matter eliminated? If this is established, to what end is such discussion? In the hands of an ignorant press and certain competitive corporations it can work a good deal of harm to those who produce good honey as well as those who produce bad.

Calabasas, Cal., March 26.

S. K. HEDSTROM.

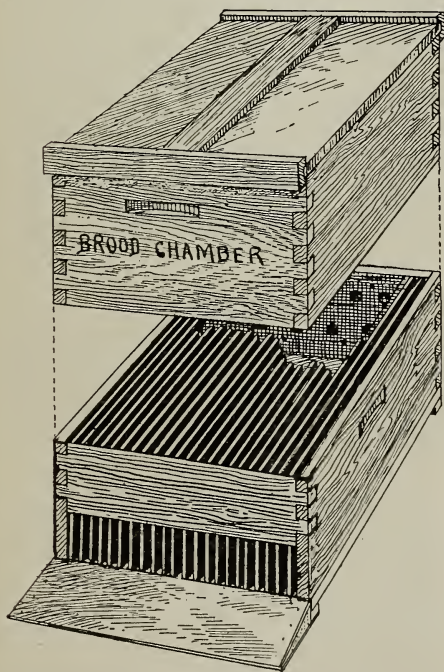
[Any saccharine matter which the bees may gather is changed chemically, either just before or just after it is stored in the comb; but many of the original characteristics of the product will be the

same. For example, nectar from the onion-plant, when "inverted" by the bees into honey, will still have the onion flavor. Honey-dew, when inverted into honey-dew honey, will still have the flavor it had in the first place, although the flavor in both cases has been modified—that is, mellowed. An excretion is, to a great extent, a waste product. It has served its purpose of nourishment in its passage through the alimentary canal, and, through the process, has lost to a very great degree its power to sustain life; but honey-dew, while an excretion of a plant-louse, is a food for other insects, ants, and bees. As it is rich in hydro-carbon (sugar), the amount of waste, relatively speaking, for the bee is probably very small. Honey-dew, even though it be an excretion, can not, therefore, be regarded as an ordinary excrement. The alimentary canal of the plant-louse is probably as clean as the honey-stomach of the bee. There is no reason why a honey-dew of good flavor should not be as clean and wholesome as most honeys. We should not class honey-dew honey alongside of ordinary excreta.—ED.]

SLATTED CLUSTERING-SPACE UNDER THE BROOD-CHAMBER TO PREVENT SWARMING.

Working along the lines as practiced by Dr. Miller in giving ventilation for swarm control I made a "contraption" that worked very successfully when placed under the brood-chamber of my worst colony of last year; in fact, it was the only colony this year that did not swarm.

I made a box of the same dimensions as a super, and same depth. The front I cut away half way up, making a large entrance. In the back I bored a number of half-inch holes extending across the box, and over these I tacked wire screen on the inside.



I filled this box or frame with partitions a bee-space apart. The partitions were made from old store boxes of about 1/4-inch stuff, but would have given more room and ventilation if something like thin fences had been used.

This contrivance gives plenty of clustering-space below the frames, a good current of air from the large entrance in front to the half-inch holes in the back. The objection I find to the blocks at the corners is that the manipulator is in the way of the flying bees if they can enter from all sides.

Nazareth, Pa., Aug. 23.

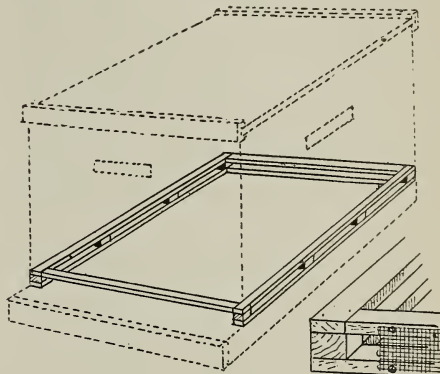
GEO. H. BEDFORD.

[It will be seen that Mr. Bedford has gone a step further than Mr. Junge, p. 295, in that his outer en-

trance is made very large—much larger than the average full-sized hive-entrance, and it seems as though this might be a desirable feature.—ED.]

A FRAME TO PROVIDE EXTRA BOTTOM VENTILATION.

I have noticed the method of ventilating hives by placing inch blocks below the brood-chamber so as to have a space all around; but robbers or even mice could get in so large a space. To overcome this difficulty I propose the scheme as illustrated. After a



frame is made according to this drawing it will raise the hive-body one inch above the bottom-board with only a half-inch space. To stop the robbing we use a piece of wire cloth one inch wide, and long enough to go around the two sides and back of the frame, tacked on the outside. If four or five supers were tiered up it might be advisable to use one of these between supers. Of course, this must be tried before it can be recommended.

Washington, D. C.,

F. W. H. WEISHAUP.

ALLEY TRAPS IN OUT-APIARIES.

I should like to see reports on the use of Alley queen and drone traps in out-apiaries that are run for comb honey. Are they a success or failure in holding swarms until the arrival of the apiarist in, say, two or three days? Do these traps permit of sufficient ventilation during the swarming season?

When bees are allowed to swarm naturally and are then shaken, I find that much better results are secured. I had several cases of swarms issuing naturally; but as the queen could not fly, the bees returned to the parent hive. I then proceeded as in the shaken-swarm plan, and had splendid results. I have 200 colonies in outyards, and find that in some years all plans fail except natural swarming.

New Milford, Pa.

F. W. DEAN.

[The Alley trap will hold swarms for two or three days; but as a rule it is far better to take care of a swarm within a few hours after it has issued. But the question may be asked, "How can we know that a swarm has gone forth?" Look carefully over the traps; and if a bunch of bees is found upstairs in any of them the presumption is that there is a queen there. The colony should be immediately shaken, and treated as a shook swarm.

When practicing shaking, care should be taken to do the work just before the colony is about to swarm. The presence of swarming-cells, and the disposition on the part of the colony to loaf, will show that it ought to be shaken. There is no earthly use in shaking the colony if it shows no swarming indications. In your case you can save a little trouble if you shake just before the swarm issues instead of doing it afterward.—ED.]

THE POSITION OF BAIT SECTIONS.

My experience with bait sections has been that the bait should always be in the back end of the super, and on the side where the sun shines most during the day, as that is always where my bees start to work first when no baits are given, as the weather is cool in early summer. Bees work where it is warmer so they can make wax more easily.

Canon City, Col., Oct. 22.

V. P. OUTLER.

TWO SIMPLE METHODS FOR MAKING INCREASE.

In the *American Bee Journal* for last year, p. 275, a method of swarming bees is given. Is it necessary to have queen-cells in the sections when transferring from hive A to hive B, or do the bees make this queen-cell after the combs are transferred? It is not clear to me where the queen-cells come from in the queenless hive.

South Norwalk, Ct.

II. BEAUPAIN.

[Dr. Miller replies:]

To make it intelligible to others I give the plan: Take from the hive to be divided half its combs with the adhering bees. Put them in an empty hive and fill up each hive with frames filled with foundation and leave the two hives standing side by side. A week to ten days later there will be in one hive eggs and brood in all stages. The other hive will have only sealed brood and perhaps some large grubs. Move the latter hive to a new stand ten feet or more distant. The bees will do the rest.

This is not given as a best plan, but as one of the very simplest for a beginner. To make a more nearly equal division, swap the four frames of foundation in the queenless hive for four frames of brood of the other hive at the time when the queenless hive is moved to its new stand.

Answering H. B.'s question, the bees in the queenless part start queen-cells as soon as they are made queenless, and no queen-cells need be given them.

To make the plan still simpler (although not so good), merely make the division as directed, without any further change in seven to ten days.

The objection to all the foregoing is that you are not sure of the best kind of queen. Here is a plan which will give a good queen, although the plan is not quite so simple, because you must find the queen: Take two frames of brood with adhering bees, and put them together with the queen in an empty hive on a new stand. That leaves on the old stand all the field force and nearly all the young bees—every thing in the very best shape to rear a good queen. In ten days let the hives swap places. That's all. You now have two good colonies. The one on the old stand with the queen and the field force will do good work at surplus. If you want it to do still better, brush (don't shake or you will kill the queen-cells) the bees from half the combs of the queenless part into the queenright part at the time you return the queen to the old stand.

Marengo, Ill.

C. C. MILLER.

PREPARING BEES FOR SHIPMENT.

I am going to ship some bees by express late in April or early in May in eight and eleven frame hives. Some hives will have to be transferred to another railroad, and thus may be longer on the way. My bees were put out March 23, and were in good condition. I protected them with building-paper.

1. Will a rim on top of the hive to tack the wire screen to be too shallow if it is $\frac{3}{4}$ thick, or should it be more? I have strips cut $\frac{3}{4}$ thick.

2. What distance above the wire screen should I fix the cover for cool or warm weather?

3. What kind of directions should I place on the hive to insure careful handling by railway officials?

4. How long can bees be confined this way without much loss?

Gironx, Man., Can.

C. LANGILL.

[1. A rim such as you describe will be deep enough for this time of year. In hot weather we would advise not less than two inches deep.

2. One or two inches—preferably two.

3. We usually put on the words "Live bees. Keep out of the sun. Handle with care." The fact that the bees are "alive" insures careful handling on the part of the railroad people.

4. This depends upon the time of year, and how the bees are put up. When wire cloth is supplied top and bottom, and the bees given water, they can go a couple of weeks; but the water should be given quite often. If they seem to be suffering from want of air, the wire screens should be sprinkled with water to cool them off. This will drive them back from the wire cloth and cool them off. It is usually desirable to get bees through to destination as soon as possible. When properly put up they will go through without any water in good shape if not on the journey longer than four or five days.

A very important requisite is to see that there is sufficient ventilation for the size of the colony. Do not try to put a very powerful colony down into one hive-body. If it is very strong, put on a half-depth

super, then a wire screen. There should also be screen for the bottom, and below the screen should be secured the bottom-board so that there may be a clearance of a couple of inches. In the spring months the screen on top is usually sufficient.—Ed.]

SHOULD THE EXCLUDER BE USED?

In studying Doolittle's plan for the production of comb honey I am a little puzzled to understand the treatment in chapters 3 and 4. After the bees are shaken into the prepared hive and the super is to be placed thereon, is the queen-excluder recommended, or is it abandoned? He has removed the excluder that was used between the hive and prepared hive in bloom time.

Silver City, N. M., Jan. 27. MRS. O. C. HINMAN.

[This was referred to Mr. Doolittle, who replies:]

When the ten-frame Langstroth hive is used, there is no need of a queen-excluder. Often the bees are shaken into the prepared hive, for with so large a brood-chamber the queen is not inclined to put brood in the sections. With an eight-frame Langstroth hive, or a small sectional brood-chamber, it is well to use the excluder as a precaution against brood in the sections.

Borodino, N. Y., April 11.

G. M. DOOLITTLE.

WILL PAPER INSTEAD OF CANDY DO IN AN INTRODUCING-CAGE?

What is the best method to introduce queens to a colony that has swarmed—that is, when I move the old hive to a new location, and in the morning wish to introduce a laying queen? Is it necessary to have candy in the cage, or would it do to fill up the hole with fibrous paper?

Wing, Ark., Feb. 18.

R. N. KING.

[The simplest and best way for the average beginner to introduce a queen is to use an ordinary introducing-cage having in one end a plug of candy which the bees eat out in from 12 to 36 hours. When the candy is removed the queen is released, and by that time will have acquired the scent of the colony. A plug of soft fibrous paper will not answer; but we frequently put a thin piece of pasteboard over the plug of candy to delay the entrance of the bees into the cage. This paper must not cover entirely the candy, as otherwise the bees will not eat it away. When properly put on, the pasteboard and candy will delay the bees' access to the queen from 24 to 48 hours. Without the pasteboard she may be released anywhere from 12 to 24 hours. This is too soon in many cases.—Ed.]

THE SCHOLL HIVE NUMBER.

Louis H. Scholl, page 87, 1908, gives his method of numbering hives, and invites bee-keepers to try the same and report. I have tried the plan for the last two seasons, and find it the most convenient I ever saw. The cost for my numbers up to 50 is less than 25 cts., and they will last for years. With these numbers the work of keeping a record of a colony is reduced to almost nothing.

Dakota, Ill., Feb. 16.

A. A. AUGENSTEIN.

SPRAYING IN BLOOM DESTRUCTIVE TO BEES.

I should like to have some information about spraying with poison while the trees are in full bloom. Will it not spoil the honey? There are lots of bees in our place. Is there any protection?

Hockingport, O., April 5.

A. B. CHUTE.

[Bees will soon be killed in the vicinity where the Bordeaux mixtures are applied to the trees while they are in bloom. The experiment stations and practically all authorities now say that trees should be sprayed just before they come into bloom and about a week after the petals fall. There is no advantage—indeed, it is a great disadvantage to the fruit-grower—in spraying while the trees are in flower. See the statement by Mr. Waugh, on page 243. He is probably the best authority, from the standpoint of fruit-growers, in the United States.

There is no law in Ohio to prevent the spraying of trees while in bloom. The only thing you can do is to send the fruit-growers the April 1st and 15th issues of this journal. Secure a copy of Waugh's book, "The American Apple Orchard," and refer them to chapter 11. These ignorant fruit-growers should be posted.—Ed.]

* Price, postpaid, \$1.00.

Our Homes

By A. I. Root

He that hath no rule over his own spirit is like a city that is broken down, and without walls.—Prov. 26: 28.

Two weeks have passed since I told you Mrs. Root and I were dispensing with suppers; and, may the Lord be praised, we shall probably go without suppers the rest of our lives. Our lives will probably be not only longer, but of more value to ourselves and all around us. The idea is humiliating, I confess, but I am now forced to conclude that I have for about 50 years been to an infinite amount of trouble to take more nourishing (and expensive) food into my system than was needed or good for me. For a time I felt hungry about my usual meal time, and occasionally about bedtime I say to Mrs. Root, "Sue, I would willingly give half a dollar for a supper of beefsteak and baked potatoes if I were sure it would be good for me;" but instead of the supper I just went to bed, and when I awoke at just about daylight I didn't feel any hunger at all, and there was no bad taste in my mouth as there has been for so many years on first arising. Now pardon me if I speak plainly in regard to a matter that is likely to trouble elderly people more or less. For years past I have had troubled dreams, and distress more or less, unless I went one or more times to the water-closet. Terry has many times spoken of this, and suggested a remedy. Well, almost as soon as I gave up eating any thing after the noonday meal I began to sleep quietly and peacefully until morning. I now eat almost what I please at dinner time, and as much as I please, and a great lot of fruit (mulberries just now) after dinner. But even if I should occasionally feel a little unpleasantly full for an hour or two, before bed time every thing in the region of digestion is quiet and tranquil. Let me say *again*, that I feel ashamed to admit that I, through stupidity, have been all these years eating suppers I did not need, and would have been better off—yes, *far better off* without. My dear brother and sister, just think of the time you might have for pleasant and profitable visiting if there were no *everlasting supper* in the way. "Hail to the brightness of Zion's glad morning" when all men and women (who love the Lord Jesus Christ) shall consent to use the time heretofore spent in getting supper (and washing the dishes), for spreading the gospel or engaging in any thing that will benefit themselves and their fellow-men.

I am going to close this Home paper (penned hastily just before starting to my northern home), with a letter from a bright young friend who is just beginning to hear the "emancipation (from three meals a day) proclamation."

Mr. A. I. Root:—Yes, I was "listening" in the March 15th number of GLEANINGS when you were talking of Mr. Terry and his work for better and more sensible living. And I am one of the younger ones too—just passed my first quarter-century.

For several years I have been interested in hygienic living, especially in eating, but never put very much of it into practice, partly because I did not feel the necessity, and partly because no one around me made a systematic study of nutrition. I was always troubled more or less with a bad taste in the mouth on getting up in the morning. The thought came to me finally that it was more important to keep the interior of the body clean and healthy than the outside, for the membranes are much more sensitive; and when any thing gets wrong inside it is much harder to fix than a bruise on the arm or a corn on one's toe. Is it not true that, if we kept the exterior of our bodies as carelessly as many do their digestive tracts, we should be very offensive creatures indeed?

Fletcher's method of eating and living appealed to me in several ways. First, I wanted more time for reading and studying, evenings, so I began eating two meals a day and "Fletcherizing" more or less.

It is surprising how few of one's good ideas are carried out. I have put enough of them into operation, however, to be benefited very materially. I found that, by eating foods that combine well, and "chewing the stuffing" out of everything that goes into the mouth, six or seven hours' sleep now does where I used to require eight or nine.

Then there is a substantial saving too. I am living on from two and a half to three dollars a week, and get my meals at restaurants mostly. My friends here pay from five to six dollars a week, and have to sleep two hours a day more than I do. It was not so very long ago that I required more myself.

But I have a very hard time getting just what I should have in a restaurant. The idea came that one could buy food such as the Battle Creek Sanitarium people put out, and, with fruits and nuts, have a diet that would supply all the elements needed to nourish the body, and the space needed to keep this food need not be large. So I tried it after getting some advice from the manager of the Sanitarium Food Store here in Denver. My food occupies no more space than my collars and ties, and my supper or lunch to-night consisted of several wheat and graham crackers, a few of Christian's honey wafers, a handful of shelled peanuts (raw), some honey, and then two good-sized apples. I did not make as much litter as a man does in smoking a cigar; had not a single dish to wash, no table-cloth to brush off or clear of dishes, and I do have a very pronounced feeling that it is sensible. One can not help becoming enthusiastic when he realizes what a small amount of energy is needed to supply the physical needs of the body, and how much more he has for work.

The Colorado Sanitarium, a branch of the Battle Creek institution, manufacture the same line of goods as are made in the East, and I get the goods at their store here in Denver.* I enclose a little pamphlet on foods that tells some of the reasons for adopting this diet. No one teaching in regard to diet will absolutely suit every case; but the main thing is to study and experiment till the best system of nutrition is found. I consider my body a sort of garden that it is my privilege to cultivate to the utmost and bring forth to maturity the choicest of fruits, mental and physical.

You may rest assured that a goodly number of GLEANINGS readers digest your Home talks, for I have a chance to visit with a good many over this State, and they nearly all mention your department when bee-papers are spoken of.

Hoping to see many more of your Home papers I am with you for a century run.

Denver, Col., April 4.

WESLEY FOSTER.

There are three very bright suggestions in the above. First, "It is even *more* important that we keep the interior of the body clean than the outside;" second, "My food occupies no more space than my collars and ties;" no table-cloth or dishes.

*Address for valuable pamphlet and price list, Colorado Sanitarium Food Co., Boulder, Colorado. Denver Branch, 1515 Stout St., Denver, Col.—A. I. R.

Thirdly, "No one teaching in regard to diet will be absolutely suit every case." "*Our bodies* are a sort of garden," etc.

Later.—To-day, April 23, we are back once more in our Ohio home. During our trip, which occupied the greater part of three days, we carefully followed our diet of two meals a day, eating nothing after our dinner at noon.* As we reached Medina just about supper-time, each one of our five children urged us to sit down to supper; and I shall have to confess that the smoking viands were quite a temptation to us to break our pledge; and after our long and in some respects tiresome trip, the temptation was very great to have one more good square meal between five and six in the afternoon. But Mrs. Root and I both decided that we would not break in upon the new regime that has given us so much satisfaction. It requires some self-command and self-sacrifice, and "ruling of one's own spirit," and I am sure we both felt better than if we had partaken of food. The next morning I felt well rested, and not particularly hungry. And this whole matter explains fully what I have been trying to teach for many years—that in these lives God has given us to live we are to let *duty* rule, and not inclination. Our constant motto should be what I *ought* to do and not what I *want* to do—that is, our lower appetites and animal nature should be constantly subservient to reason and good common sense.

Now I will add in closing that I still have my apples in the evening—that is, a few good ripe mellow apples, so you will not think I do not practice what I preach. I have tried both ways, with and without the apples, and I am satisfied that the fruit alone does not tax my digestive apparatus in any way so as to be a detriment. Mrs. Root does not care for the apples in the evening.

Poultry Department

By A. I. Root

GETTING RICH WITH CHICKENS; THE OTHER SIDE OF THE MATTER.

Mr. A. I. Root:—I notice that you have been kind enough to express hearty approbation of Mr. Boyer's write-up of the Corning egg-farm. You have also even more heartily approved Milo Hastings' book, "*The Dollar Hen*," as well as the *Prairie State Incubator Co's* catalog. It is a long distance between the conservative statements in the latter books and the title of the Corning egg-book.

I have been waiting for criticism of the Corning egg-book; but I have not yet read any thing of that kind. I was hoping that, with your penchant for showing up the poultry fakes, you would have read this book carefully enough to discover the delusive mode of reasoning employed to obtain the above-mentioned title. The statement of "\$6.41 per hen

per year" will, if allowed to go unchallenged, cause a great many would-be poultry-farmers to embark in the poultry business who never would have gone into it had the statement been conservative. This letter is written to try to save those who may risk their small savings in the "Corning method" (?).

In the first place, look at the admission that the Cornings have spent three years and over \$20,000 on this egg-farm—a considerable part of one's life, and a good-sized fortune for the ordinary man.

In obtaining the net profit per hen, no mention is made of the *interest on investment, insurance, upkeep* due to depreciation, etc. Let us estimate what this amounts to.

INVESTMENT—	
12 acres of land at \$500	\$6000 00
1 Homestead	4000 00
1 plant, including implements, automobile, horses, etc.,	30000 00
INSURANCE—	
Plant at rate of 50 cts. per \$100	\$150 00
House, \$2500 at 25 cts. per \$100	6 25
UP-KEEP—	
15% of \$30,000 (see Dollar Hen, p. 71)	\$4500 00
INTEREST—	
8% of \$30,000	\$2400 00
6% of \$10,000	600 00

Note that the homestead is charged against the hens, because just that amount is tied up and can not be used in the egg business.

Accepting the figures on page 13 of the Corning egg-book relating to revenue and expenditures at their face values, we shall have for revenue \$15,714.84. To the expenditure of \$3194.03 we will add insurance, \$156.25; up-keep, \$4500; interest, \$3000, or a total of \$10,850.28. Subtracting this from the revenue we get \$4864.56, or the Cornings would have over \$2400 each for their labor per year, out of which they would have to pay their living expenses. Taking the above figures into account, the net profit per hen per year would be \$2.49—a figure much more reasonable than \$6.41.

Not wishing to throw any doubt on the figures as set down, and criticising only the methods of obtaining them, let us try to show what the average would-be poultry-farmer could expect. We learn that 23,316 dozen eggs were laid in ten months on the Corning farm. This number was obtained by multiplying the total number of hens (1953) by the average egg yield per hen for only ten months. A serious misstatement is made on p. 18, end of paragraph three of the Corning book—"Leghorns on Sunny Slope Farm last year averaged 143.25 (eggs) for ten months, at the rate of 171.9 a year." Suppose the hens laid no eggs for the remainder of the year, the yearly average would be about 120 eggs per hen year instead of 171.9. Probably 125 would be a fair estimate, as some hens would lay during the moulting season. What would this do to the Cornings' figures, if they kept their hens for 12 months after they began to lay, as most of us do? I do not see why it is not correct, when figuring on a yearly basis, to count in two months before pullets begin to lay. I should like to ask the Cornings if they would buy several thousand moulting hens (yearlings) and pay just one dollar apiece for them. Certainly 144 eggs per hen per year is not exceptional for a large flock of hens when the drones are eliminated by trap nests. The Cornings use no trap nests, and 125 eggs per hen per year is all they could expect by their method—see *Reliable Poultry Journal*, December, 1908, page 967, end of first paragraph of first column.

When it comes to the price received for eggs sold by the Cornings, it appears to me that they forgot to mention the cost of shipping, and also that only the best retail prices were averaged. No mention is made of the prices received from commission merchants, although it is admitted that eggs were sold to such (see middle of page 15, Corning book). No mention is made of the cost of selling, such as advertising, stationery, postage, printing, greasing the Stewarts' palm, etc. Such things as these would have to be paid for by the ordinary farmer. Note that the Cornings' letterhead reads that their eggs are "delivered daily by messenger," which ought to cost something when 20,000 dozen eggs are so delivered.

The average price paid for eggs by consumers in the United States during 1909 was 33 cents, and they were sold by the farmers at an average price of 22 cents per dozen. Milo Hastings has charted a price-curve on page 172 for the price of eggs during 1908.

* I have already talked about the saving in time and money by having only two meals. If this is true in the home, how much more is it true when traveling! Three meals a day taken in the dining-car is rather expensive business, as you know if you have tried it. Well, you not only cut off a third of the expense, but you will find you can stand the wear and tear of travel very much better.

The highest price is about 32 cents, and eggs were retailed in New York city for nearly double that amount during the early part of the winter. The average price received by F. B. Atherton in 1908 for eggs was 32½ cts. per dozen, from which was deducted express charges, commission, breakage, and return of empty cases. This amounts to about 5½ cts. per dozen, making a net average price of 27 cts. (see "Egg-farm that Pays \$1300 per Year," *Reliable Poultry Journal*, December, 1908).

I should like to ask the reader what price he thinks he can obtain for eggs when selling upward of 20,000 dozen per year.

The Cornings are credited with selling 1900 hens, although they are called pullets, for two dollars each, when sixteen months old. These hens were starting to moult, and could not be of much use for the next six months. The reason given for the high price received is that they were sold for breeding purposes. It is universally admitted that yearling hens make good breeders; but hens kept in confinement, and forced for eggs, have lost a great part of their vitality, and never can produce strong healthy chickens (see *Prairie State Incubator Catalog*, pages 5, 15, 24). The inexperienced (or otherwise) persons who purchase such birds for breeding purposes get "stung;" and whose reputation suffers in the end? Personally I should like to get two dollars each for yearling hens in large quantities, or even that amount for pullets a year younger. According to the advertisements that have come under my observation, the poultry-raisers are very glad to get two dollars apiece for their young surplus stock when sold singly, and are glad to accept \$1.25 to \$1.50 each when selling by the dozen. Even at that they do not advance their prices until December. If the would-be egg-farmer figures that he can get 75 cents per head for yearling hens (especially Leghorns) he will be high enough.

On page 21 the Cornings speak of their original and economical laying-houses. In the first place, houses just as good could be built for half the money. The only original principle employed is to build these houses so as to house one large flock. The objections to this kind of house are drafts and disease. In order to get out of the wind blowing through this house, the hens have to crowd back under the dropping-boards (see middle of page 36). Disease can be kept under only by eternal vigilance. The chief criticism I have to this house is the small amount of opening there is in front, especially as the hens are allowed only in the scratching-room in warm weather (see bottom of page 36). These houses are almost identical in size and shape with mine, an illustrated description of which was published in the *Reliable Poultry Journal* for January, 1909. Many poultrymen, including myself, use the dry method of feeding. The hens get a large feed at night, consisting of a quantity of the best commercial scratch feed and a varying quantity of cracked corn and oats scattered in the litter. At the after-dark inspection more grain is buried in the litter if deemed necessary. Water is given them every morning—hot in winter. At noon, sprouted oats and table-scraps are fed. A hopper containing dry mash is placed before the birds in the afternoon. Mash consists of corn meal, bran, middlings, red-dog, ground oats, beef scrap, cut clover, charcoal, etc. Hoppers containing grit, shell, and charcoal are placed before them all the time. The hens enjoy picking cinders out of the coal ashes that are spread upon the dropping-boards.

West Nutley, N. J., March 30. A. W. FLEMING.

Thanks, friend F., for your criticism of the Corning egg-book. I still think the book a valuable contribution to our recent poultry literature, even if it does give an extravagant idea in many respects. In fact, I think it very much superior to most of the books written to show up a particular system. In looking over the book hastily I was especially pleased with the footnotes from Boyer.

The *Farm Journal* folks may have something to say in regard to your criticisms of the book; and if so I shall be very glad to receive them, for God knows we want to give the great hard-working public the real

unvarnished truth in regard to the poultry business.

While on this subject I wish to say something more about the book I mentioned on page 167, March 1—"the Kellerstrass way of raising poultry"—the book that "one can read through in 35 minutes, but which took 36 years to write." In the very opening chapter of the book Mr. Kellerstrass says, "Remember, I have been a good many years writing this book, and it is all from actual experience—no hot-air dreams, but actual experience." I have before pointed out to you that a great part of this dollar book, with only 91 pages, is devoted to advertising extravagantly his eggs at \$2.00 apiece. Now, one of our poultry-journals has recently pointed out that this is not all of it. Another great part of the book is made up of directions for work during every month in the year, from January to December. When I read over these instructions it seemed to me they did not refer *particularly* to the "Kellerstrass way" nor to the Crystal White Orpington chickens. Well, this poultry-journal calls attention to the fact that nearly all of these instructions for each month in the year are *copied*, the greater part of them, word for word, from Park & Pollard's *Poultry Almanac*, Boston, Mass. This almanac (for the years 1907, 1908, 1909, and 1910) and the Kellerstrass book are before me. How does this condition of things correspond with the paragraph I have quoted about "no hot-air dreams but *actual experience*"? What explanation has Mr. Kellerstrass and his numerous friends (including many of the poultry-journals) to make about it?

High-pressure Gardening

By A. I. Root

TESTING SEED CORN IN OUR SCHOOLS.

The Department of Agriculture, Washington, has just done a wonderfully wise thing in preparing a pamphlet, dated April 9, 1910, for use in our schools, and especially our country schools, instructing the teachers and children how to test seed corn before it is planted in the field. I can not think of any thing more valuable in the education of a child than to interest him in seed germination. This method, if followed out, would not only add thousands of dollars, but perhaps millions, to the income of the farmers of our nation. Last, but not least, it would tend to put the parents and teachers in touch with each other better than almost any thing else; and it certainly should give the parents confidence in regard to the value of the schools by getting the children to be on hand promptly on every school day. Apply to the Department of Agriculture, Washington, D. C., and ask for Circular 96, entitled "How to Test Seed Corn in the Schools."

The plan is about the same as I have

given in GLEANINGS every spring for three or four years. It takes about fifteen ears of good size to plant an acre. Select the best ears you can find. Place them where they will not be disturbed, in rows of ten ears each. Then get a shallow box, say 1½ feet wide and 2 feet long. Fill it with sand or good garden soil, and then with tacks and strings lay it out in squares about 1½ inches on each side. Have as many squares as you have ears of corn. Our plan is to lay a piece of two-inch-mesh poultry-netting over the box. Fasten it down with tacks, and then take five grains of corn from each ear and plant them in the meshes of the poultry-netting. Have your box numbered across one end and across one side, and have it so arranged that, when any square does not show five good strong corn-plants, the ear from which these five kernels were taken may be discarded. In this way, when you come to plant you are pretty sure to have a good strong plant from each kernel of corn. The average schoolchild, with a little instruction from the teacher, will soon learn to do the work, and will greatly enjoy it.

May the Lord be praised for this new and wonderful scheme for getting our American schools in touch, not only with high-pressure gardening, but high-pressure *agriculture* in general.

SOIL SUITABLE FOR SWEET CLOVER.

I have inquiries from readers of the *Rural New-Yorker* in regard to the seeding of sweet clover and the character of soil best suited to it. Sweet clover will grow on any soil that is not water-logged if it contains sufficient moisture to sprout the seed. On very thin and worn soils the growth is small compared with that on fertile soils. We use sweet clover to build up thin and much depleted soils—fields that have become useless as pasture—those filled with washes and gullies. These fields generally have a growth of small bushes or briars, where they have been lying idle for several years. These are cut and tramped into the ruts. The tops of the little ridges are dug off and raked into the ruts, which help to hold the briars and bushes in place until they are converted into humus. If the washes and gullies are not too deep the seed is harrowed in with a double A harrow; otherwise the seed is sown early in the spring, just as soon as the soil can be stirred, and about half a bushel of spring oats sown with it. The amount of seed to be sown per acre on fields as described above is 15 or 20 lbs.; on soil that is reasonably fertile, where sown for hay or pasture, 25 to 30 lbs. per acre. Where sown to produce seed, the soil should be reasonably fertile and 15 lbs. of seed per acre sown broadcast, and harrowed in. Sow as early in the spring as the soil can be stirred. For fall seeding, prepare a good seed-bed and sow the seed in October.

Sweet clover for hay should be cut just as the first blossoms appear. If left standing longer the stems become woody, and a great many of the leaves fall off when cured. Great care should be exercised to prevent the hay sun-burning, as this will destroy the palatableness and its nutritive properties. There is no better way to fit a piece of ground for alfalfa than to seed to sweet clover, cut off a crop of hay the first season, and plow under the second season when the clover is about a foot tall; then cultivate with drag and harrow until the first of September, then seed to alfalfa. The sweet clover improves the soil and inoculates it with the nitrogen-gathering bacteria which are so necessary to the existence of alfalfa. When seeding for hay I would not use any nurse crop; and do not cut too close to the ground the first time. Leave five or six inches of stubble to protect the crown and roots until a new growth is made. If permitted to go to seed the second season, and the seed to ripen, it will reseed itself. The sweet-clover plant lives but two years. It dies at the end of the second season, and its large fleshy

roots decay rapidly, admitting the air deep into the subsoil.

Warsaw, Ky.

J. W. G.

—*Rural New-Yorker*.

Temperance

When I gave place to "Who are the guilty ones?" on p. 96, Feb. 1, I was aware it had appeared in print a good many times, and also that it might not all have occurred exactly as given there; but since then a clipping has been sent me of something that *has occurred* quite recently, very much like it. May God be praised that even judges are beginning to wake up and call things by their right names. Here is the clipping:

THE SALOON CONVICTED: THE BOYS HANGED.

In pronouncing the death sentence on two boy murderers at Owatonna, Minn., Judge Buckman delivered this philippic against the saloon:

"Every community can well ask if it is not equally guilty with its sister city in not making a vigorous effort to remove the snares which lie in waiting for the young in almost every town in the Union. These boys can not have been brought to perpetrate such a crime through the influence of heredity. There is nothing to show it. It must be charged, if it be true that they are guilty, to their environment. Without any ill feeling toward the people of this community, I must say that they are *particeps criminis* in this tragedy, if the boys are guilty. The people have allowed the conditions which have brought these boys to such a pass. It is because the boys could procure of newsdealers such literature as debased their moral natures; because the police, knowing of the conditions existing in the rooms of these, permitted them to go on; because the saloon-keepers of the city were allowed to place on the lips of the young that which fires the brain and sears the soul. By imposing the death sentence the court will be striking at the effect, not the cause; and if the cause remains undisturbed, the result will be another such case as a righteous retribution upon those responsible."

HITTING THE NAIL SQUARELY ON THE HEAD.

The following, which I clip from the *Chicago Advance*, sums up the whole matter of "wet and dry" better than any thing I know of. I wish it could be held up before the whole wide world, until every man, woman, and child has read it.

LET THEM MOVE.

The following appeared in the funny columns of the press recently:

"What are they moving the church for?"

"Well, stranger, I'm mayor of these diggin's, an' fer law enforcement. We've got an ordinance what says no saloon shall be nearer than 300 feet from a church. I give 'em three days to move the church."

This incident did not occur in Chicago, but the idea has been occurring every day since the anti-saloon campaign began. It is about all there is of the saloon side of the question. Wives have cried out in agony that the saloons were taking the husband's wages and robbing the children of bread.

"Well, let the wives move out and the children stop eating." Mothers have said with bitter tears that saloons were ruining their sons. "Well, let the mothers forget their sons and stop their whining." Citizens have declared that saloons are the resort of thieves and the whole bad bum element. "Well, let the good citizens go to some other country, if they don't like it."

In a word, the saloons are against the welfare and the common good which all law and righteous government are intended to promote. "But let it all go—the saloon must stay."

How can the people of a county that has voted *wet* look a good man or woman full in the face after reading the above?